

Service
Service
Service

Service Manual

Contents	Page
1 Technical Specifications, Connections, and Chassis Overview	2
2 Safety Instructions, Maintenance, Warnings, and Notes	5
3 Directions for Use	6
4 Mechanical Instructions	14
5 Service Modes, Error Codes, Fault Finding, and Repair Tips	17
6 <i>Block Diagrams</i>	
Block Diagram Video	23
Block Diagram Audio	24
Block Diagram Power Supply	25
Power Lines Overview	26
I ² C-IC Overview	27
Testpoint Overview Audio Amplifier	28
Testpoint Overview Power Supply	29
Testpoint Overview SCAVIO	30
Wiring Diagram	31
7 <i>Electrical Diagrams and PWB lay-outs</i>	<i>Diagram PWB</i>
Audio Amplifier: DC Protection (Diagram A1)	32 39-40
Audio Amplifier: Filters (Diagram A2)	33 39-40
Audio Amplifier: Left High (Diagram A3)	34 39-40
Audio Amplifier: Left Low (Diagram A4)	35 39-40
Audio Amplifier: Right High (Diagram A5)	36 39-40
Audio Amplifier: Right Low (Diagram A6)	37 39-40
Audio Amp: Supply +DC Prot. (Diagram A7)	38 39-40
LED/Switch Panel (Diagram LD)	41 42
Power Supply: Function Blocks (Diagram P1)	43 50-56
Power Supply: Filter + Standby (Diagram P2)	44 50-56
Power Supply: Protections (Diagram P3)	45 50-56
Power Supply: Fan Control (Diagram P4)	46 50-56
Power Supply: Pre Conditioner (Diagram P5)	47 50-56
Power Supply: LLC Supply (Diagram P6)	48 50-56
Power Supply: Aux Supply (Diagram P7)	49 50-56

Contents	Page
SCAVIO: Function Blocks (Diagr. SC1)	57 72-81
SCAVIO: Sync Selection (Diagr. SC2)	58 72-81
SCAVIO: Video Selection (Diagr. SC3)	59 72-81
SCAVIO: Video ADC (Diagr. SC4)	60 72-81
SCAVIO: Video Select. Decoder (Diagr. SC5)	61 72-81
SCAVIO: VGA Input (Diagr. SC6)	62 72-81
SCAVIO: Control Functions 1 (Diagr. SC7)	63 72-81
SCAVIO: Control Functions 2 (Diagr. SC8)	64 72-81
SCAVIO: Scaler Clock Gen. (Diagr. SC9)	65 72-81
SCAVIO: PW Scaler + Memory (Diagr. SC10)	66 72-81
SCAVIO: Back-End EPLD (Diagr. SC11)	67 72-81
SCAVIO: Back-End LVDS Out (Diagr. SC12)	68 72-81
SCAVIO: Audio Source Select. (Diagr. SC13)	69 72-81
SCAVIO: Audio Processor (Diagr. SC14)	70 72-81
SCAVIO: Audio Delay Line (Diagr. SC15)	71 72-81
VGA Connector Panel (Diagr. VGA)	82 83-84
8 Electrical Alignments	85
9 Circuit Descriptions	88
List of Abbreviations	108
IC Data	110
10 Spare Parts List	113

©Copyright 2002 Philips Consumer Electronics B.V. Eindhoven, The Netherlands.
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without the prior permission of Philips.



1. Technical Specifications, Connections and Chassis Overview

1.1 Technical Specifications

1.1.1 Picture

Display	: FHT plasma panel
Screen size	: 32" (82 cm)
Resolution	: 1024 x 852 pixels
Contrast ratio	: 400 : 1

1.1.2 Sound

Maximum power	: 30 W _{rms}
---------------	-----------------------

1.2 Connections

1.2.1 Rear Connections

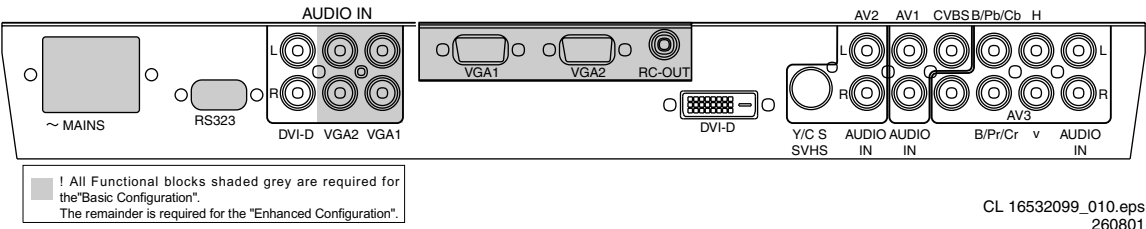


Figure 1-1 Rear Connections

RS232

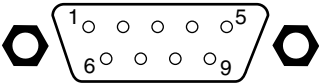


Figure 1-2 RS232 connector (subD-9p)

VGA1 - In

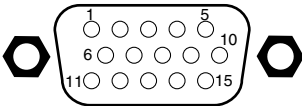


Figure 1-3 VGA Connector

1 -		
2 - TXD	(UART)	⊕
3 - RXD	(UART)	⊕
4 - RL_ICN	(ICONN)	⊕
5 -	Ground	⊕
6 - GL_ICN	(ICONN)	⊕
7 - LD_ICN	(ICONN)	⊕
8 - IR_TX	(ICONN)	⊕
9 - IR_RX	(ICONN)	⊕
10 -	Ground	⊕
11 -	Ground	⊕

Audio - In (DVI-D)

1 - Audio - L	0.5 V _{rms} / 1 kΩ	⊕
2 - Audio - R	0.5 V _{rms} / 1 kΩ	⊕

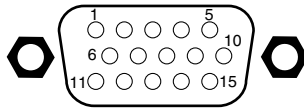
Audio - In (VGA2)

1 - Audio - L	0.5 V _{rms} / 1 kΩ	⊕
2 - Audio - R	0.5 V _{rms} / 1 kΩ	⊕

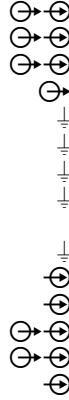
Audio - In (VGA1)

1 - Audio - L	0.5 V _{rms} / 1 kΩ	⊕
2 - Audio - R	0.5 V _{rms} / 1 kΩ	⊕

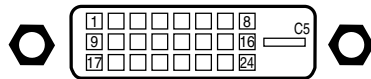
1 - Red	0.7 V _{pp} / 75 Ω	⊕
2 - Green	0.7 V _{pp} / 75 Ω	⊕
3 - Blue	0.7 V _{pp} / 75 Ω	⊕
4 - TXD		⊕
5 -	Ground	⊕
6 - Red	Ground	⊕
7 - Green	Ground	⊕
8 - Blue	Ground	⊕
9 - RC		⊕
10 -	Ground	⊕
11 - RXD		⊕
12 - DDC_SDA		⊕
13 - H-sync	0 - 5 V	⊕
14 - V-sync	0 - 5 V	⊕
15 - DDC_SCL		⊕

VGA2 - Out**Figure 1-4 VGA Connector**

1 - Red	(0.7 V _{pp} /75 Ω)
2 - Green	(0.7 V _{pp} /75 Ω)
3 - Blue	(0.7 V _{pp} /75 Ω)
4 - TXD	
5 -	Ground
6 - Red	Ground
7 - Green	Ground
8 - Blue	Ground
9 -	
10 -	Ground
11 - RXD	
12 - DDC_SDA	
13 - H-sync	0 - 5 V
14 - V-sync	0 - 5 V
15 - DDC_SCL	

**RC - Out**

- RC

**DVI-D****Figure 1-5 DVI-D Connector**

1 - RX2-	
2 - RX2+	
3 -	Ground
4 -	
5 -	
6 - DDC-SCL	
7 - DDC-SDA	
8 -	
9 - RX1-	
10 - RX1+	
11 -	Ground
12 -	
13 -	
14 - 5V_STBY_SW	
15 -	Ground
16 - 5V_STBY_SW	
17 - RX0-	
18 - RX0+	
19 -	Ground
20 -	
21 -	Ground
22 -	
23 - RXC+	
24 - RXC-	
c5 -	Ground

**AV2: SVHS - In**

1 - Y	Ground
2 - C	Ground
3 - Y	1 V _{pp} / 75 Ω
4 - C / 16:9	0.3 V _{pp} / 75 Ω

**AV2: Audio - In**

1 - Audio - L	0.5 V _{rms} / 10 kΩ
2 - Audio - R	0.5 V _{rms} / 10 kΩ

**AV1: Audio/Video - In**

1 - CVBS	1 V _{pp} / 75 Ω
2 - Audio - L	0.5 V _{rms} / 10 kΩ
3 - Audio - R	0.5 V _{rms} / 10 kΩ

**AV3: Audio/Video - In**

1 - G/Y/Y	0.7 V _{pp} / 75 Ω
2 - B/Pb/Cb	0.7 V _{pp} / 75 Ω
3 - R/Pr/Cr	0.7 V _{pp} / 75 Ω
4 - H	
5 - V	
6 - Audio - L	0.5 V _{rms} / 10 kΩ
7 - Audio - R	0.5 V _{rms} / 10 kΩ



1.3 Chassis Overview

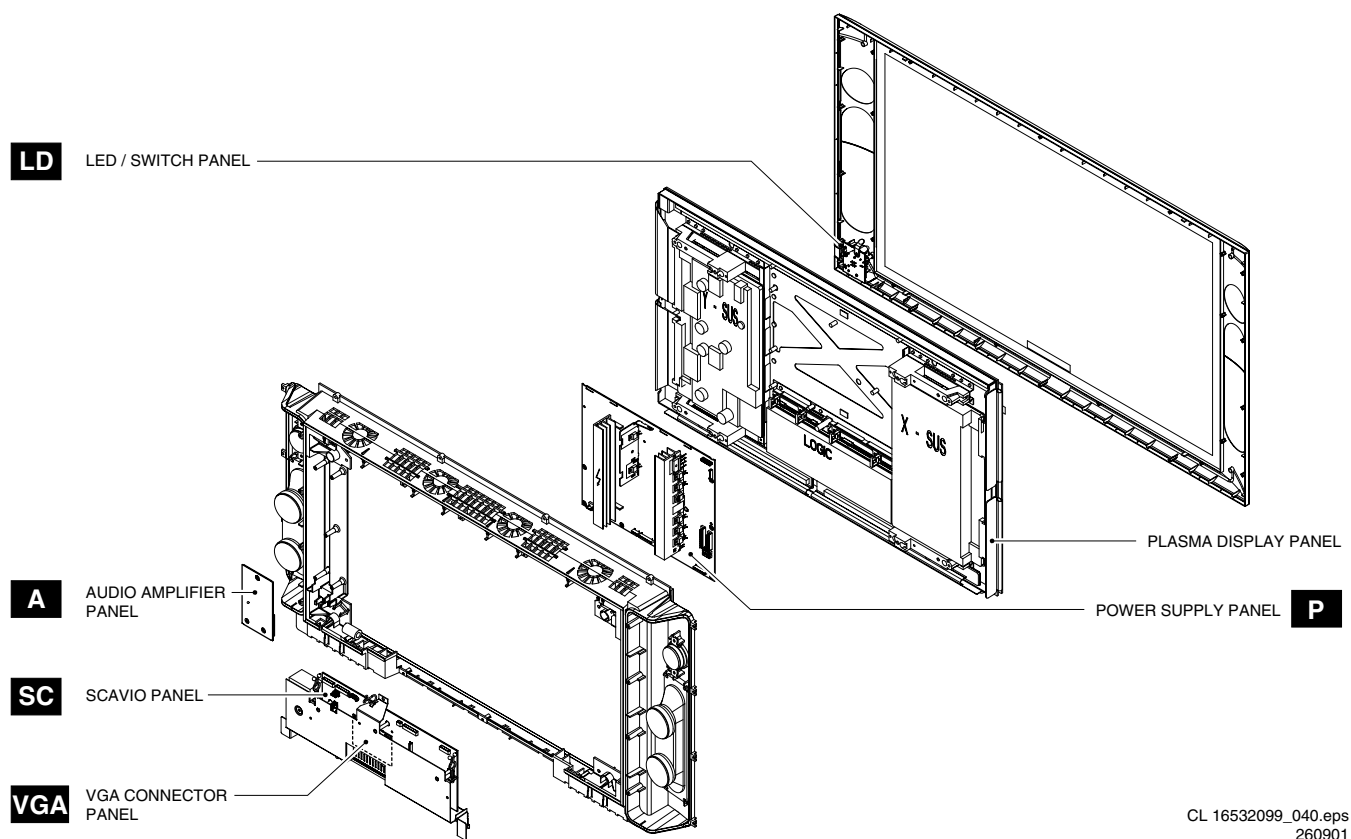


Figure 1-6 PWB Location

2. Safety Instructions, Warnings and Notes

2.1 Safety Instructions

Safety regulations require that **during** a repair:

- Connect the set to the mains via an isolation transformer (= 800 VA).
- Do not operate the monitor without the front glass plate. One function of this glass plate is to absorb IR radiation. Without this glass plate, the level of radiation could damage your eyes.
- Replace safety components, indicated by the symbol , only by components identical to the original ones.

Safety regulations require that **after** a repair, the set must be returned in its original condition. Pay, in particular, attention to the following points:

- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the mains lead for external damage.
- Check the electrical DC resistance between the mains plug and the secondary side (only for sets which have a mains isolated power supply):
 1. Unplug the mains cord and connect a wire between the two pins of the mains plug.
 2. Set the mains switch to the 'on' position (keep the mains cord unplugged!).
 3. Measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ.
 4. Switch 'off' the set, and remove the wire between the two pins of the mains plug.
- Check the cabinet for defects, to avoid touching of any inner parts by the customer.

- Where necessary, measure the voltages in the power supply section both in normal operation (ⓘ) and in standby (Ⓢ). These values are indicated by means of the appropriate symbols.
- The semiconductors indicated in the circuit diagram and in the parts lists, are interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors

2.2 Warnings

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD ) . Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.

Available ESD protection equipment:

- Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
- Wristband tester 4822 344 13999.
- Be careful during measurements in the high voltage section.
- Never replace modules or other components while the unit is switched 'on'.
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.3 Notes

- Clean the glass plate in front of the plasma display with a slightly humid cloth. If, due to circumstances, there is some dirt between the glass plate and the plasma display, this must be cleaned by a qualified service engineer (see chapter 4).
- Measure the direct voltages and oscillograms with regard to the chassis ground ($\perp$), or hot ground ($\downarrow$) as this is called.
- The direct voltages and oscillograms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5).

3. Directions for Use

English

Unpacking and wall mounting instructions

For the unpacking instructions follow the illustrated steps printed on the packaging (outside and inside). For the wall mounting instructions follow the illustrated steps ➊ to ➋ printed on the separate leaflet.
Make sure that the wall mount is being fixed securely enough so that it meets safety standards. The weight of the monitor (excl. packaging) is about 24 kg.
Note: Stands are optional accessories. Consult your dealer.

Connect your TV receiver box

See the separate supplied instruction manual with your TV receiver box.

Connect your computer

To the TV receiver box

See the illustration in the inside frontcover of this handbook.

- ➊ Connect one end of a VGA cable to the video card of the computer and the other end to the **VGA IN** connector at the rear side of the TV receiver box. Fix the connectors firmly with the screws on the plug.
- ➋ In case of a Multimedia computer, connect the audio cable to the audio outputs of your Multimedia computer and to the **AUDIO VGA R** (right) and **L** (left) inputs of the TV receiver box.

Directly to the monitor

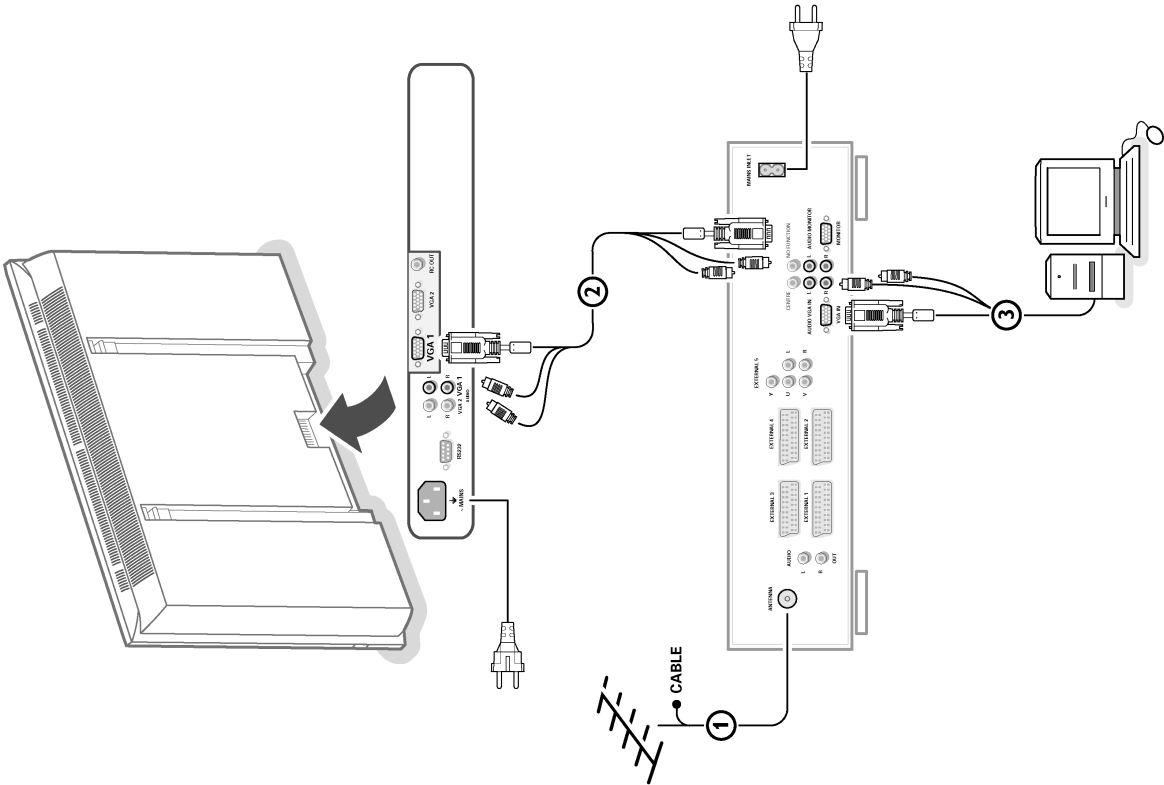
- ➊ Connect one end of a VGA cable ➊ to the video card of the computer and the other end to the **VGA 1** connector at the rear side of the monitor. Fix the connectors firmly with the screws on the plug.
- ➋ In case of a Multimedia computer, connect the audio cable ➋ to the audio outputs of your Multimedia computer and to the **AUDIO VGA 1 R** (right) and **L** (left) inputs of the TV monitor.

Daisy chaining

The Loop Through facility makes it possible to make a daisy chain with a second monitor.

- ➊ Connect one end of another VGA cable to the **VGA 2** connector at the rear side of the monitor and the other end to the **VGA 1** connector of a second monitor.
- ➋ In case of a Multimedia computer, also connect audio cables to the **AUDIO L** and **R** outputs of the original monitor and to the **AUDIO L** and **R** inputs of the second monitor.

*The RC out jack next to the VGA 2 connector makes it possible to daisy chain remote control signals to other equipment.
This output cannot be used to daisy chain a second monitor.*



Monitor Display modes

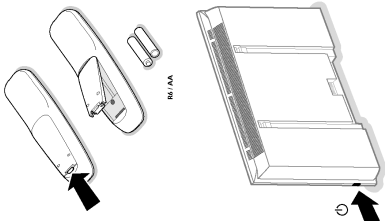
VGA	640x480	60, 72, 75, 85 Hz
Wide VGA	848x480	60 Hz
MAC	852x480	60 Hz
MAC	640x480	66.67 Hz
MAC	832x624	74.55 Hz
MAC	1024x768	74.93 Hz
MAC	1152x870	75 Hz
SVGA	800x600	56, 60, 72, 75, 85 Hz
XGA	1024x768	60, 70, 75, 85 Hz
SXGA	1280x1024	60, 72 Hz

When a VGA computer is connected, the display selection is made automatically.

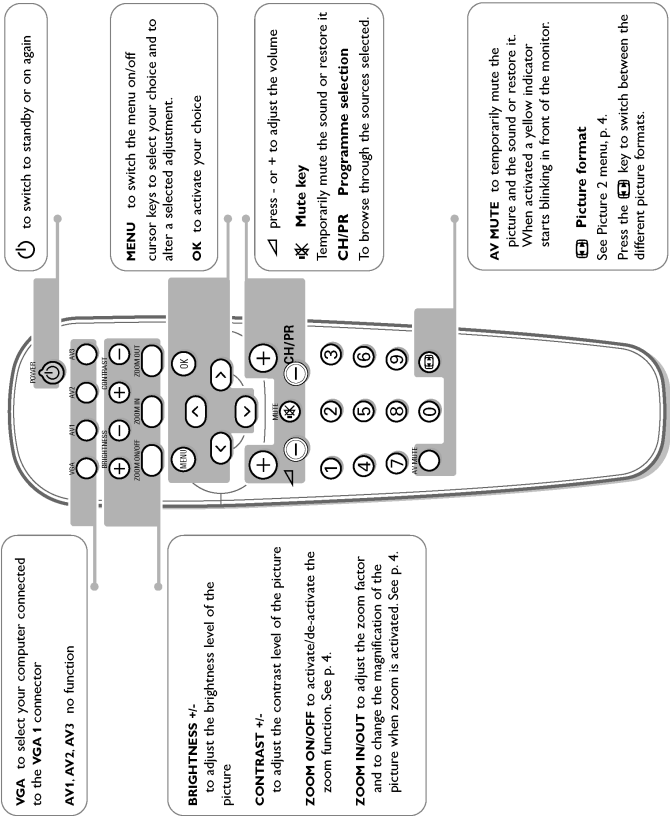
A message is displayed when the monitor does not support the connected VGA mode. Switch your computer to a correct display mode.

Operation

- 1 Insert the mains plug supplied into the mains inlet at the back of the monitor and in the wall socket.**
For safety please, only use the supplied rim-earthed mains cord which has to be inserted in a grounded socket.
 - 2 Remote control: remove the cover of the battery compartment.**
Insert the 2 batteries supplied (Type R6/AA-1.5V).
The batteries supplied do not contain the heavy metals mercury and cadmium. Nevertheless in many countries batteries may not be disposed of with your household waste. Please check on how to dispose of batteries according to local regulations.
 - 3 Make sure that your TV receiver box and/or PC are switched on and that your PC is in the correct display mode.**
 - 4 Switch the monitor on :** Press the on/off key  at the right side of the monitor.
A green indicator lights up and the screen comes on.
When the monitor does not receive a supported VGA signal and is not connected to a receiver box, the screen switches to standby and the red indicator lights up.
- When you switch on your monitor **for the first time**, and the monitor is not connected to a TV receiver box, the language menu automatically appears on the screen. The explanation appears in different languages one at a time.
Follow the instructions on screen to select the correct language or see Setup menu, Language, p. 5.



Use of the remote control



Use of the menus and the menu system

- Picture 1

Picture 2

Sound

Setup

Brightness

Contrast

Colour temperature

Sharpness
- 1

Press the **MENU** key on the remote control to summon the different menu headers.

2

Press the cursor left/right to move the cursor horizontally through the menu headers.

3

Press the cursor down to access the menu.

4

Press the **MENU** key again to switch off the menu.
- In case of a slider, move the cursor left/right to adjust.

In case of a list with options, move the cursor right to enter and use the cursor up/down to select an option.

Press the cursor left to leave the options list.

*Notes: Sometimes not all the menu items are visible on the screen.
Press the cursor down until all the items are displayed.
Only when the US English language has been selected (see Setup menu, Language, p. 5), the menu items will be displayed with additional icons.*

Operation

Press the **MENU** key on the remote control to summon the main menu.

Picture 1 menu

Brightness
This control allows you to adjust the brightness level of the picture.

Picture 1

- Brightness

Contrast

Colour temperature

Sharpness

Contrast

This control allows you to adjust the contrast level of the picture.

Colour temperature

This control allows you to select the colour temperature of the picture.
Move the cursor up/down to make a selection.
Press the cursor left to return to the Picture 1 menu.

Sharpness

This control allows you to adjust the edge definition of a picture.

Picture 2 menu

In this menu you are allowed to adjust attributes which are relevant for the picture on the display, like format, zoom, size, etc.

Format

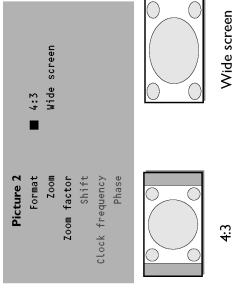
Select **Format** to summon a list of **available** display formats for showing images in the traditional 4:3 proportions.
Press the cursor up/down to select another display format: 4:3 or Wide screen.

Zoom

Select **Zoom On** to activate the zoom function.
You may also activate the zoom function with the **ZOOM ON/OFF** key on the remote control.
Press the cursor left/right, up/down to select which part of the screen will be zoomed.

Zoom factor

Select **Zoom factor** and press the cursor left/right to adjust the zoom factor and to change the magnification of the picture.
If zoom is not active, Zoom Off; changing the magnification factor will have no effect on the displayed picture.



Clock frequency
This control allows you, when necessary, to adjust the values of the clock frequency so that especially text can be displayed with an optimal overall sharpness.
Use the cursor left/right to adjust.

Shift

This control allows you, when necessary, to move the picture in a horizontal or vertical way.

1 Use the cursor left/right to adjust.

2 Press the **OK** key when done.

Phase

This control allows you, when necessary, to adjust the pixel phase of the picture to avoid picture interference.

Use the cursor left/right to adjust.

Sound menu

Volume

This control allows you to adjust the volume level.

Bass

Bass attenuates or amplifies the low-frequency response of the sound of the loudspeakers.

Treble

Treble attenuates or amplifies the high-frequency response of the sound of the loudspeakers.

Sound mode

This control allows you to switch between mono and stereo sound.

Note: Bass, Treble and Sound mode will not be available when a TV receiver box is connected to the monitor and a VGA source is selected.

Setup menu

Language

- 1

Use the cursor down to select **Language**.
- 2

Press the cursor right to enter the list of selectable languages.
- 3

Use the cursor up/down to scroll through the list and to bring up other languages which are not displayed on the screen at present.

Tips

Ambient temperature

Do not hang up the monitor above a central heating or other heating sources.

Care of the screen

Clean the anti-reflex coated flat glass screen with a slightly damp soft cloth. Do not use abrasives solvents as it can damage the glass surface of the screen.

Plasma Display characteristics

Caution: A video source (such as a video game, DVD, or TV information channel) which shows a constant non-moving pattern on the TV screen, can cause damage to the screen. When your Flat-TV is continuously used with such a source, the pattern of the non-moving portion of the game (DVD, etc.) could leave an image permanently on the screen. When not in use, turn the video source **OFF**. Regularly alternate the use of such video sources with normal TV viewing.

When switching over to another picture after having displayed the same still picture for a long time (many hours), it may happen that some parts from the previous picture will remain on screen due to a kind of memory effect. This ghost picture will disappear after some time. To avoid this effect change the pictures regularly or for PC use you can turn on a screen saver in your computer.

For video signals, Philips has built in an automatic shift of the picture every 5 minutes to avoid this effect and to prolong the life of the screen.

Very incidentally and after a longer period of unuse (approx. 1 year) the screen may display some strange colour deficiencies. This is quite normal for plasma displays and these effects will disappear after the set has been turned on for some time. A plasma display consists of more than 2.6 million colour pixels. It is within industry standards that very few pixels (< 0.001%) may be defective, even for a new set. There is however no reason to doubt about the quality of the set. The plasma display technology operates with rare gases which are being influenced by air pressure.

End of life directives

Philips is paying a lot of attention to produce environmentally-friendly in green focal areas. Your new monitor contains materials which can be recycled and reused.

At the end of its life specialised companies can dismantle the disassembled monitor to concentrate the reusable materials and to minimise the amount of materials to be disposed of. Please ensure you dispose of your old monitor according to local regulations.

How to dispose of batteries ?

The batteries supplied do not contain the heavy metals mercury and cadmium. Nevertheless in many countries batteries may not be disposed of with your household waste. Please ensure you dispose of batteries according to local regulations.

Miscellaneous

- Ambient temperature: + 5~ + 40° C
- Maximum operating altitude: 2000 m
- Mains: Auto Voltage ranging from 95V to 264V
- Power consumption: around 280 W
- Standby consumption: < 1 W
- Weight (excl. packaging): Display 24 kg
- Dimensions (w/ht/d): Display 96.4 x 51.2 x 8.9 cm
- Wall mounting bracket included

Up to an altitude of 2000 m above sea-level, the display is functioning fine. Operating the set at a higher altitude, the picture becomes unstable and the picture performance is deteriorating. After bringing the set below 2000 m it works fine again. Transportation has no influence.

Control of peripheral equipment

The infrared signals of the screen may influence the reception sensitivity of other peripherals. Solution: replace the batteries of the remote control or change position of other equipment. E.g. keep away a wireless headphone from within a radius of 1.5 m.

No stable or not synchronised VGA picture

Check if you have selected the correct VGA mode in your PC.

No picture or no sound

Are the supplied cables connected properly? (The power cable to the display, the VGA cables, the audio cables,...) Is your PC or TV receiver box switched on?

Do you see a black screen and the indicator on front of the monitor lights up green, this means that the display mode is not supported.

Switch your VGA source to a correct mode.

Remote control

If your monitor no longer responds to the remote control, the batteries may be exhausted.

If your problem is not solved:

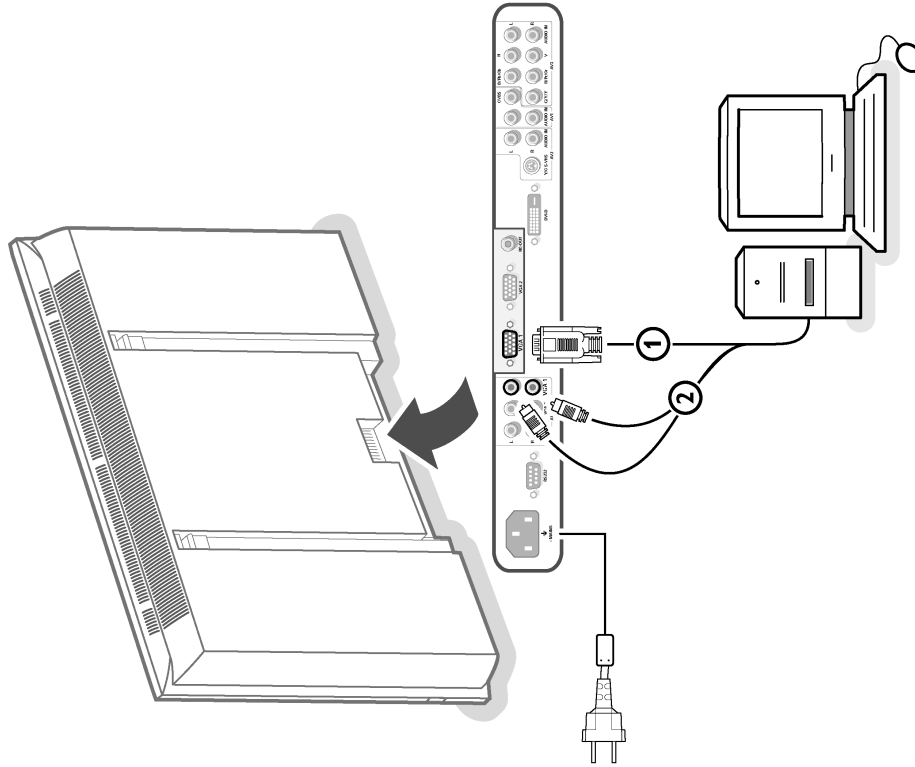
Switch your monitor off and then on again.

Never attempt to repair a defective monitor yourself.

Check with your dealer or call a TV technician.

Transport

Keep the original packaging to transport the monitor if needed.



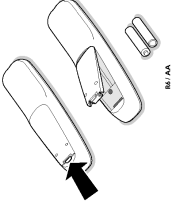
Computer Display modes

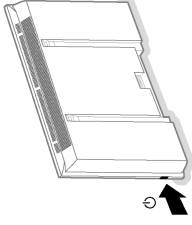
VGA	640x480	60, 72, 75, 85 Hz
Wide-VGA	848x480	60 Hz
Wide-VGA	852x480	60 Hz
MAC	640x480	66.67 Hz
MAC	832x624	74.55 Hz
MAC	1024x768	74.93 Hz
MAC	1152x870	75 Hz
SVGA	800x600	56, 60, 72, 75, 85 Hz
SVGA	1024x768	60, 70, 75, 85 Hz
SVGA	1280x1024	60 Hz,
		72 Hz (not with DVI-D source)

When a VGA computer is connected, the display selection is made automatically.

A message is displayed when the monitor does not support the connected VGA mode. Switch your computer to a correct display mode.

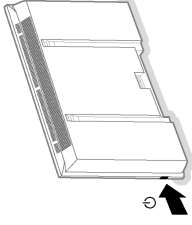
Operation

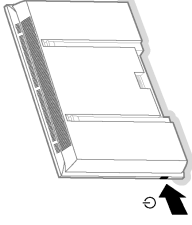
- 

1 Insert the mains plug supplied into the mains inlet at the back of the monitor and in the wall socket. For safety, please, only use the supplied rim-earthed mains cord which has to be inserted in a grounded socket.
- 

2 Remote control: remove the cover of the battery compartment.

Insert the 2 batteries supplied (Type LR6/AA-1.5V).

The batteries supplied do not contain the heavy metals mercury and cadmium. Nevertheless in many countries batteries may not be disposed of with your household waste. Please check on how to dispose of batteries according to local regulations.
- 

3 Make sure that your TV receiver box and/or PC are switched on and that your PC is in the correct display mode.
- 

4 Switch the monitor on : Press the power key  at the right side of the monitor.

A green indicator lights up and the screen comes on.

When the monitor does not receive a supported VGA signal and is not connected to a receiver box, the screen switches to standby and the red indicator lights up.

When you switch on your monitor **for the first time**, and the monitor is not connected to a TV receiver box, the language menu automatically appears on the screen. The explanation appears in different languages one at a time.

Follow the instructions on screen to select the correct language or see Setup menu, Language, p. 8.

Unpacking and wall mounting instructions

For the unpacking instructions follow the illustrated steps printed on the packaging (outside and inside). For the wall mounting instructions follow the illustrated steps **3** to **6** printed on the separate template and in the supplied booklet.

Make sure that the wall mount is being fixed securely enough so that it meets safety standards. The weight of the monitor (excl. packaging) is about 53 Lbs or 79 Lbs, depending on the screen size (32" or 42").

Note: stands are optional accessories. Consult your dealer.

Connect your computer

Directly to the monitor

- 1** Connect one end of a VGA cable **1** to the video card of the computer and the other end to the **VGA 1** connector at the rear side of the monitor. Fix the connectors firmly with the screws on the plug.
- 2** In case of a Multimedia computer, connect the audio cable **2** to the audio outputs of your Multimedia computer and to the **AUDIO VGA 1 R** (right) and **L** (left) inputs of the TV monitor.

VGA 2: The video connector for VGA 2 can be programmed to become an input or an output via the Setup menu, see p. 8. The function of being input or output is determined by the used mode. If the monitor is used in TV mode, the VGA 2 connector is VGA output. If the monitor is used in monitor mode, the connector is VGA input or output.

To a TV receiver box

See the handbook of the TV receiver box.

- 1** Connect one end of a VGA cable to the video card of the computer and the other end to the **PC/MAC IN** connector at the rear side of the TV receiver box. Fix the connectors firmly with the screws on the plug.
- 2** In case of a Multimedia computer, connect the audio cable to the audio outputs of your Multimedia computer and to the **AUDIO IN R** (right) and **L** (left) inputs of the TV receiver box.

Note: Only use the VGA cable supplied with the monitor.

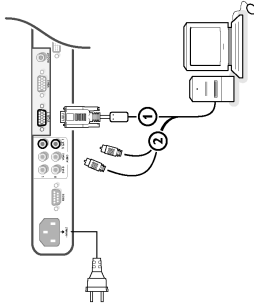
Daisy chaining

The Loop Through facility makes it possible to make a daisy chain with a second monitor.

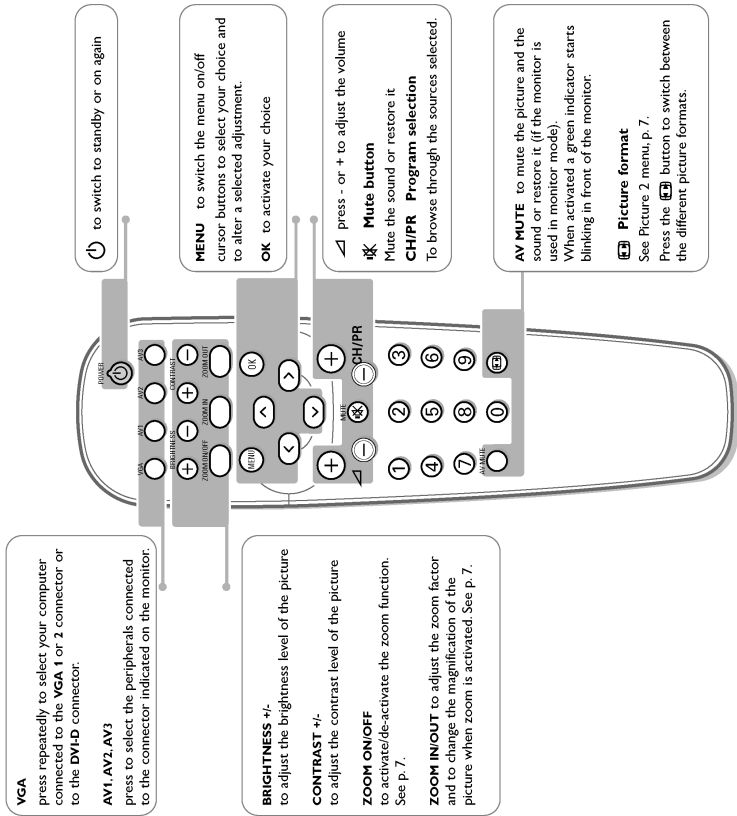
- 3** Connect one end of another VGA cable to the **VGA 2** connector at the rear side of the monitor and the other end to the **VGA 1** connector of a second monitor.
- 4** In case of a Multimedia computer, also connect audio cables to the **AUDIO L** and **R** outputs of the original monitor and to the **AUDIO L** and **R** inputs of the second monitor.

The RC out jack next to the VGA 2 connector makes it possible to daisy chain remote control signals to other equipment.

This output cannot be used to daisy chain a second monitor.



Use of the remote control



On screen information

When the monitor is used in the monitor mode, information about the active source (**AV1**, **AV2**, **AV3**, **VGA1**, **VGA2** or **DVI-D**), and the supported video, **VGA** or **HD**-format of the selected source is displayed on the screen together with the selected picture format and icons informing about selected sound mode and **AV** or audio mute.

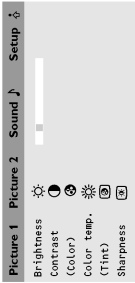
Use of the menus and the menu system

- 1 Press the **MENU** button on the remote control to summon the different menu headers.
- 2 Press the cursor left/right to move the cursor horizontally through the menu headers.
- 3 Press the cursor down to access the menu.
In case of a slider, move the cursor left/right to adjust.
In case of a list with options, move the cursor right to enter and use the cursor up/down to select an option.
Press the cursor left to leave the options list.
- 4 Press the **MENU** button again to switch off the menu.

Note: Sometimes not all the menu items are visible on the screen.

Press the cursor down until all the items are displayed.

Only when the US English language has been selected (see Setup menu, Language, p. 8), the menu items will be displayed with additional icons.



Operation

Press the **MENU** button on the remote control to summon the main menu.

Picture 1 menu

Brightness
This control allows you to adjust the brightness level of the picture.

Contrast

This control allows you to adjust the contrast level of the picture.

Color (only available when the source is **AV1**, **AV2** or **AV3 YCbCr**)

This control allows you to adjust the saturation level of the colors to suit your personal preference.

Color temperature

This control allows you to select the color temperature of the picture. Move the cursor up/down to make a selection.

Press the cursor left to return to the Picture 1 menu.

Tint (only with **NTSC** signals and when the source is **AV1** or **AV2**)

This control allows you to compensate for the color variations in **NTSC** encoded transmissions.

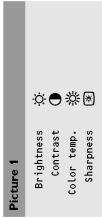
Sharpness

This control allows you to adjust the edge definition of a picture.

SD video-mode



VGA-mode + HD video mode



SD video-mode

Picture 2

Format 4:3

Movie expand 16:9

Wide screen

Zoom

Zoom factor

VGA-mode + HD video mode

Picture 2

Format 4:3

Wide screen

Zoom

Zoom factor

(Shift)

(Clock frequency)

(Phase)

(Auto align)

4:3 VGA-mode

4:3

Wide screen

SD video-mode

4:3

Wide screen

1

Use the cursor left/right, up/down to adjust.

2

Press the OK button when done.

Clock frequency

See Connect Peripheral equipment, p. 9).

This control allows you, when necessary, to adjust the values of the clock frequency so that especially text can be displayed with an optimal overall sharpness.

Use the cursor left/right to adjust.

Phase

Only available in VGA mode on VGA1 or VGA2. See Connect Peripheral equipment, p. 9).

This control allows you, when necessary, to adjust the pixel phase of the picture to avoid picture interference.

Use the cursor left/right to adjust.

Auto align

Only available in VGA mode on VGA1 or VGA2 and in one of the HD modes. See Connect Peripheral Equipment, p. 9).

This control allows you to automatically adjust the shift, the clock frequency and the phase in VGA mode and the shift in HD modes.

Press OK to execute.

Picture 2 menu

Zoom

Select Zoom On to activate the zoom function. You may also activate the zoom function with the ZOOM ON/OFF button on the remote control. If no zoom is active, press the cursor left/right, up/down to select which part of the screen will be zoomed.

Zoom factor

Select Zoom factor and press the cursor left/right to adjust the zoom factor and to change the magnification of the picture. If zoom is not active, changing the magnification factor will have no effect on the displayed picture.

Format

Only available in 4:3 VGA mode and SD video mode

Select Format to summon a list of available display formats. Press the cursor up/down to select another display format: 4:3, Movie expand 16:9 or Wide screen. Note: Movie expand 16:9 is not available in VGA mode.

Shift

Only available in VGA mode on VGA1 or VGA2 and in one of the HD modes. See Connect Peripheral Equipment, p. 9).

This control allows you, when necessary, to move the picture in a horizontal or vertical way.

1

Use the cursor left/right, up/down to adjust.

2

Press the OK button when done.

Use of the menus

7

Sound menu

Volume

This control allows you to adjust the volume level of the sound from the speakers.

Bass

Bass attenuates or amplifies the low-frequency response of the sound from the loudspeakers.

Treble

Treble attenuates or amplifies the high-frequency response of the sound from the loudspeakers.

Sound mode

This control allows you to switch between mono and stereo sound. Note: Bass, Treble and Sound mode will not be available in VGA loop through mode, i.e. when a TV receiver box is connected to the monitor and a VGA source is selected.

Setup menu

Language

1 Use the cursor down to select Language.

2 Press the cursor right to enter the list of selectable languages.

3 Use the cursor up/down to scroll through the list and to bring up other languages which are not displayed on the screen at present. Note: Only with the US English language, the menu items will be displayed with additional icons.

Power savings

This control allows you to override the automatic power savings feature. In case Power savings is switched Off, the power always remains on until the monitor is forced to standby.

1 Use the cursor down to select Power savings.

2 Press the cursor left/right to select On or Off.

AV3

This control allows you to set the AV3 input to HD-RGB, YCbCr or HD-YPrPb. When having selected Auto, the monitor makes the selection automatically between YCbCr, HD-YPrPb or HD-RGB. See also p. 9. Equipment with Component Video Output connectors.

1 Use the cursor down to select AV3.

2 Press the cursor right to enter the list with options.

3 Press the cursor up/down to select one of the options.

VGA2

This control allows you to select whether to set the VGA2 connector as input, output or even HD-input.

1 Use the cursor down to select VGA2.

2 Press the cursor right to enter the list with options: VGA IN, VGA OUT or HD IN.

3 Press the cursor up/down to select one of the options. Note: AV3 and VGA2 will not be available in VGA loop through mode, i.e. when a TV receiver box is connected to the monitor and a VGA source is selected.

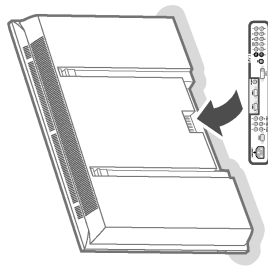
Use of the menus

8

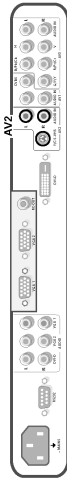
Connect Peripheral Equipment

You may connect 3 possible VGA sources (VGA1, VGA2 or DVI-D) and 3 possible video sources (AV1, AV2 and AV3) to the monitor. The following diagrams show you where you can connect your peripheral equipment.

Note: in case the monitor is operating in combination with a TV receiver box (TV mode), the AV inputs on the monitor will be disabled and the VGA2 connector becomes an output.

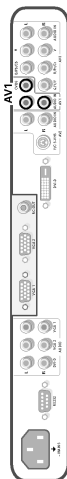


Equipment with Y/C-SVHS output connectors



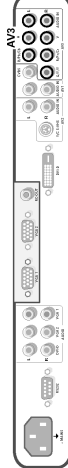
- 1 Connect the video cable to the AV2 connector.
- 2 Connect the audio cables to the equipment's AUDIO L and R sockets and to the AUDIO L and AUDIO RAV2 sockets on the monitor.

Equipment with CVBS output connectors



- 1 Connect the video cable to the AV1 connector.
- 2 Connect the audio cables to the equipment's AUDIO L and R sockets and to the AUDIO L and RAV1 sockets on the monitor.

Equipment with Component Video Output connectors



Note: AV3 can handle the following video signals: YCbCr, HD-YPrPb and HD-RGB. The discrimination between the various input formats and the appropriate video processing is done automatically. It is however possible to override the automatic detection. See Setup menu, p. 8.

- 1 Connect the video cables of your equipment with YPrPb output with composite sync on Y or of your equipment with YCbCr output with composite sync on Y to the YPrPb, resp. YCbCr input AV3 IN sockets of the monitor.
- 2 Connect the video cables of your equipment with RGB output with separate Horizontal and Vertical sync to the RGB input sockets and to the H and V sockets AV3 of the monitor.
- 3 Connect the audio cables to the equipment's AUDIO L and R sockets and to the AUDIO IN L and AUDIO IN R AV3 IN sockets on the monitor.

Note: when High Definition signals are inputted to the monitor via the YPrPb/RGB input, the monitor switches to the HD Video Mode.

The following HD and ED video modes are supported by the monitor on the YPrPb, RGB and VGA2 HD input:

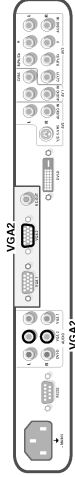
1920x1080/60i 720x480/60P
1280x720/60P 720x576/50P

The following SD video modes are supported by the monitor on the YCbCr input:

720x480/60i
720x576/50i

Note: you should make the correct selection for AV3 in the Setup menu, p. 8.

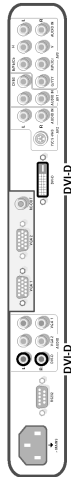
High Definition equipment with YGA connector



- 1 Connect the VGA output of your equipment to the VGA2 connector.
- 2 Connect the audio cables to the equipment's AUDIO L and R sockets and to the VGA2 AUDIO L and R sockets on the monitor.

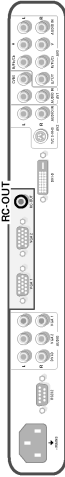
Note: you should select HD IN for VGA2 in the Setup menu (See p. 8).

Digital DVI output of your PC (DVI-D) or DVD player



- 1 Connect the Digital DVI output of your PC or DVD-player to the DVI-D connector.
- 2 Connect the audio cables to the DVI-D AUDIO L and R sockets on the monitor.

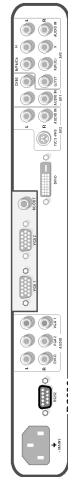
RC out connector



This connector allows you to daisy chain remote control signals to other equipment (e.g. AV receiver, IR repeater) which have an electrical RC in.

Note: it is not possible to daisy chain a second monitor.

Serial I/O port RS232



The RS232 connector is only to be used with the monitor as stand alone. This connector allows you to control the monitor via your PC (as a replacement of the remote control). **Software is supplied on CD-ROM.**

Note: this connector can also be used for dealer service tools.

Supplied driver software

Disclaimer of all warranties: Philips makes no warranty, representation, nor promise with regard to this software. Philips disclaims and excludes any and all express or implied warranties of merchantability, title, or fitness for a particular purpose. Philips does not warrant that the software or documentation will satisfy your requirement or that the software and documentation are without defect or error or that the operation of the software will be uninterrupted. Limitation of liability: Philips and the authors of programs sold by Philips accept no responsibilities nor liability arising from or relating to this software or documentation.

4. Mechanical Instructions

Index of this chapter:

- Service Position Monitor
- Rear Cover Removal
- Service Position Panels
- PDP and Glass Plate Replacement
- Re-assembly

Note: Figures below can deviate from the actual situation, due to different set executions.

4.1 Service Position Monitor

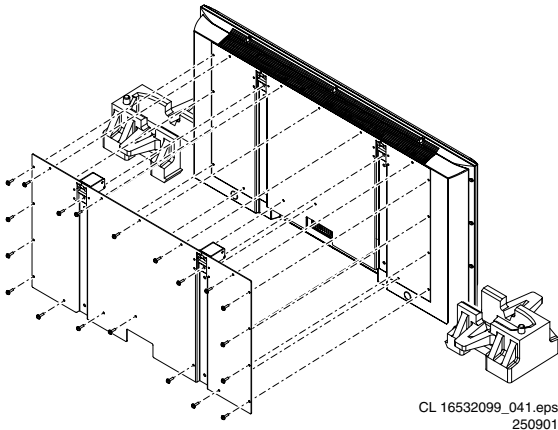


Figure 4-1 Service Position

First, put the monitor in its service position. Therefore, disconnect all cables connected to the monitor and take the monitor off the wall (or tabletop stand). Then, place the monitor in the re-inforced transport cushions that function also as service stand (you can order them separately under code 3122 126 40612). See figure above.

4.2 Rear Cover Removal

To be able to access or measure the panels, remove the rear cover (metal back plate):

Warning: make sure that the mains power is disconnected before you remove the metal back plate.

1. Remove all fixation screws from the back plate, as indicated in figure above (five at the top, four at each side, seven at the bottom, and the two larger ones just below the 'wall mounting holes').
2. Remove the metal back plate. Make sure that wires and flat foils are not damaged during plate removal.

4.3 Service Position Panels

4.3.1 SCAVIO Panel

Solder-side SCAVIO

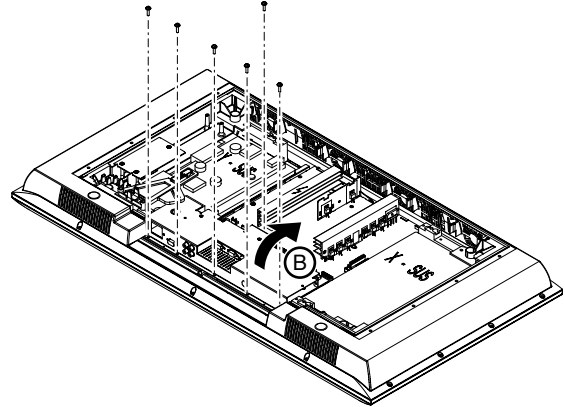


Figure 4-2 Service position SCAVIO (1)

To access the panel:

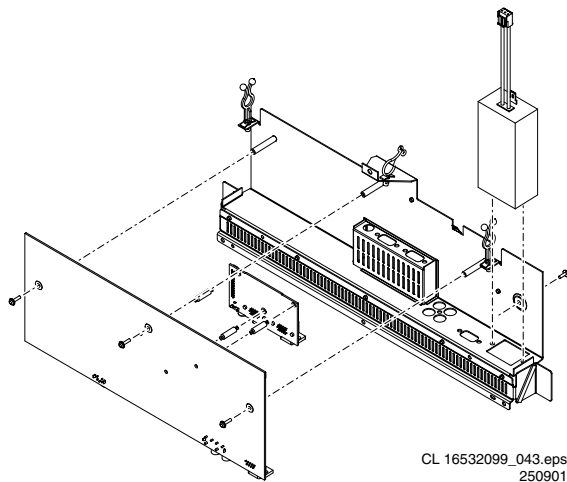
1. Remove the cables from connectors 0320, 0305, 0301, 0319 and 0388 on the SCAVIO panel.
2. Remove the power cable from the mains power inlet to the power supply (connector 0308).
3. Remove the five screws at the bottom of the SCAVIO panel cover plate.
4. Hold the SCAVIO panel while removing the top screw, in order to prevent that it will fall.
5. Take the panel out, and turn it 180 degrees, so that you face the solder side of the SCAVIO panel.
6. Reconnect all cables. Use a standard power cable to connect the mains directly to PSU-connector 0308, and use the 'LED/Switch panel' service kit 3122 785 90410 (as the original cable is too short).

Caution: When measuring, watch out for the 'hot' left heat sink of the PSU!

Another way to measure the SCAVIO panel:

1. Remove the five screws at the bottom of the SCAVIO panel cover plate.
2. Hold the SCAVIO panel while removing the top screw, in order to prevent that it will fall.
3. Put a piece of paper (or cardboard) in front of the Power Supply.
4. Take the panel out, and turn it upward [B], so that you face the solder-side of the SCAVIO panel.

Caution: Make sure that the metal connector plate does not touch any 'hot' part of the Power Supply (heatsink).

Component-side SCAVIO**Figure 4-3 Service position SCAVIO (2)**

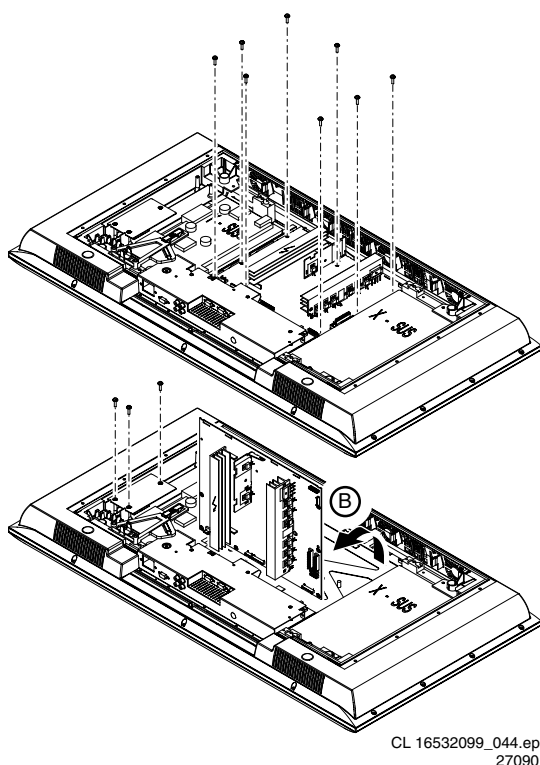
To access the other side of the SCAVIO panel:

1. Disconnect all cables going to the SCAVIO panel.
2. Remove all screws at the connectors of the connector plate, see figure 'Solder-side SCAVIO'.
3. Remove the three fixation screws that connect the SCAVIO panel to the connector plate, see figure 'Component-side SCAVIO'.
4. Reconnect the SCAVIO panel, be careful: do not make a short-circuit!

4.3.2 VGA Connector Panel

To remove the VGA Connector Panel:

1. Squeeze the three plastic pins that connect this panel to the SCAVIO board, while you pull it carefully upwards.
2. Unplug the flat cable.

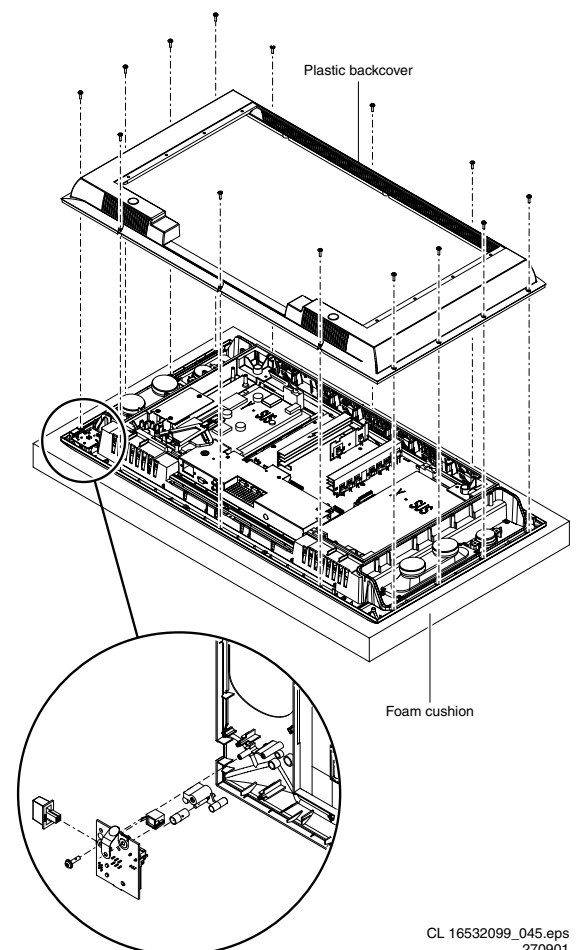
4.3.3 Power Supply Panel**Figure 4-4 Service Position Power Supply**

It is possible to perform most measurements from the component level side (thus, how the panel is mounted in the set). However, to reach the copper side of the Power Supply:

1. Unplug the power.
2. Remove all eight fixation screws from the Power Supply: three at each side and two in the middle.
3. Hinge the Power Supply forward, so that you can reach the copper side. Use a non-conducting part underneath, to support the PWB (e.g. a carton box). Caution: make sure that, when you hinge the Power Supply forward, you do not damage the cables. Pay special attention to the flat cable (on connector 0307) and the cable on connector 0306, because they can be easily damaged by the sharp edge of the connector plate.
4. To remove the Power Supply, unplug all cables.
5. Remove the Power Supply.

4.3.4 Audio Amplifier Panel

The solder-side of this panel is directly accessible. To access the component-side, or to remove the whole panel, unscrew the three fixation screws (see figure 'Power Supply Panel'), and (re)move the panel.

4.3.5 LED/Switch Panel and Speakers**Figure 4-5 Service Position LED/Switch Panel and Speakers**

To access or replace the LED/Switch panel and/or speakers:

1. Take the monitor from its service stand, and put it (face down) on a soft surface (blanket or foam cushion), to make sure that you do not damage the front glass plate.
2. Unscrew all fixation screws of the plastic back cover: four at the left and right side, three at the bottom and top side.
3. Lift and remove the plastic back cover.
4. You can access now the LED/Switch panel and/or the speakers.

4.3.6 LED/Switch panel

To measure the component-side, or to remove the LED/Switch panel, unscrew one fixation screw (see enlarged part of figure 'LED/Switch Panel and Speakers'), and remove the panel.

4.3.7 Loudspeakers

As soon as you have removed the plastic back cover, you must replace the speaker-box sealing foams (12nc: 3122 358 76221). This, to ensure that the loudspeakers are airtight. Do not stretch the foam during mounting. Pay special attention to the corners, to make sure that the foam is not stretched and that it is pushed in the corners.

4.4 PDP and Glass Plate Replacement

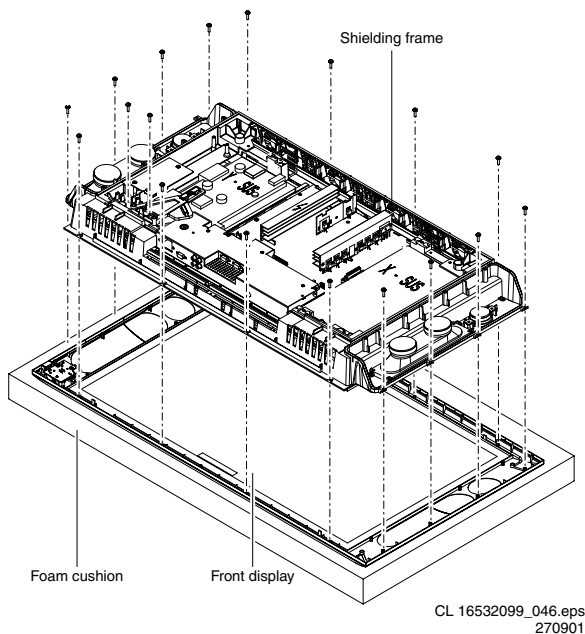


Figure 4-6 Exchange Glass Plate

Exchange the glass plate

1. Take the monitor from its service stand, and put it (face down) on a soft surface (blanket or foam cushion), to make sure that you do not damage the front glass plate.
2. Remove the metal back plate as described in paragraph 'Rear Cover Removal'.
3. Unscrew all fixation screws of the plastic back cover: four at the left and right side, three at the bottom and top side.
4. Lift and remove the plastic back cover.
5. Unscrew two fixation screws of the triangular shaped cable holder at the left bottom, see figure 'Exchange Glass Plate'.
6. Unscrew all fixation screws of the (metallised) shielding frame, four at both sides and four at the top and bottom, see figure 'Exchange Glass Plate'.
7. Unplug the cable of the LED/Switch panel, connector 0320.
8. You can now remove the (metallised) shielding frame, together with the PDP, Audio panel, Power supply and SCAVIO panel attached to it, see figure 'Exchange Glass Plate'. **Note:** To prevent scratches, make sure to put the shielding frame together with the PDP on a soft surface.
9. Replace the glass plate.

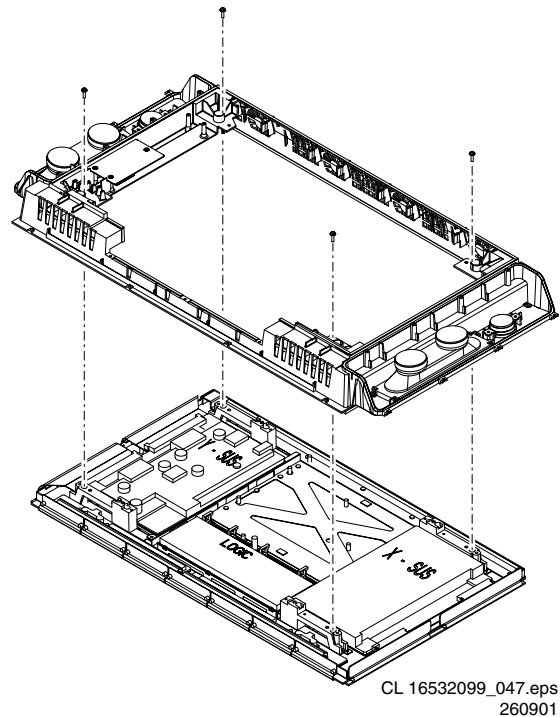


Figure 4-7 Exchange PDP

To exchange the PDP panel:

1. Take out the SCAVIO panel and Power Supply panel, as described earlier.
2. Unscrew all fixation screws of the (metallised) shielding frame (two at the top and two at the bottom, see figure 'Exchange PDP').
3. The shielding frame can now be taken off the PDP.
4. Replace the PDP.

4.5 Re-assembly

To re-assemble the whole set, do all processes in reverse order.

Notes:

- You must replace the speaker-box sealing foam, in case the plastic rear cover has been (re)moved.
- While re-assembling, make sure all the cables are in their original position and make sure all the EMC foams are present to ensure 'EMC tightness'.

5. Service Modes, Error Codes and Fault Finding

Index of this chapter:

1. Test points
2. Service Modes
3. Problems and Solving Tips (related to CSM)
4. ComPair
5. Error Codes
6. The Blinking LED Procedure
7. Protections
8. Repair Tips

5.1 Test Points

The chassis is equipped with test points (I- and F-points) printed on the circuit board assemblies. See test point overview in chapter 6.

Perform measurements under the following conditions:

- Service Default Mode.
- Video: colour bar signal (via PC or VGA-generator).
- Audio: 1 kHz, 2 V_{PP} (via PC or VGA-generator).

5.2 Service Modes

Service Default Mode (SDM) and Service Alignment Mode (SAM) offer several features for the service technician, while the Customer Service Mode (CSM) is used for communication between a Philips Customer Care Centre (P3C) and a customer.

There is also the option of using ComPair, a hardware interface between a computer (see requirements) and the FTV chassis. It offers the ability of structured trouble shooting, test pattern generation, error code reading, software version readout and software upgrading.

Minimum requirements: a Pentium Processor, Windows 9x/NT/2000/XP, and a CD-ROM drive (see also paragraph 5.4).

5.2.1 Service Default Mode (SDM)

Purpose

- To create a pre-defined setting to get the same measurement results as given in this manual.
- To override SW protections (only when SDM is entered via the 'service pins' on connector 0382).
- To start the blinking LED procedure.

Specifications

- All picture settings at 50% (brightness, contrast, etc.).
- Colour temperature is set to 'normal'.
- Bass, treble and balance at 50%; volume at 25%.
- All service-unfriendly modes (if present) are disabled, like:
 - Video blanking,
 - Slow de-mute,
 - Anti ageing,
 - Automatic switch to Standby when no sync signals are received.

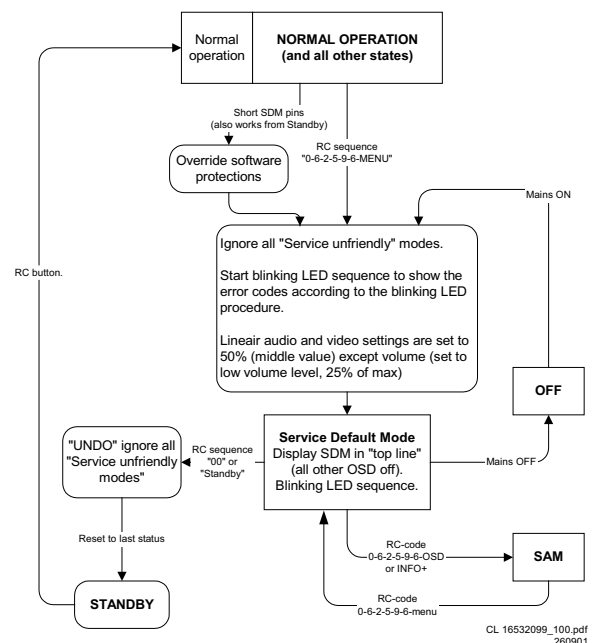


Figure 5-1 SDM Flowchart

How to enter SDM

Use one of the following methods:

- Use the standard RC-transmitter and key in the code **0 6 2 5 9 6**, directly followed by the MENU button.
- Short jumpers 1 and 2 of connector 0382 on the SCAVIO panel.

After entering SDM, a blank screen is visible, with SDM in the upper left side for recognition. The Blinking LED procedure is started and will indicate any possible errors via the (orange) front LED.

How to navigate

To toggle to the SAM mode, use a standard customer RC-transmitter and key in the code **0 6 2 5 9 6**, directly followed by the **OSD (+)** key.

How to exit

Use one of the following methods (the set returns to its last status):

- Switch the set to STANDBY by pressing the power button on the remote control transmitter (if you switch the set 'off' by removing the Mains power, the set will return in SDM, when the Mains power is re-applied).
- Use the standard RC-transmitter and key in the code **0 0**.

5.2.2 Service Alignment Mode (SAM)

Purpose

- To perform (software) alignments.
- Easy way to identify the commercial type number of the set.
- Easy identification of the used software versions.
- To display (or clear) the error code buffer.
- View operational hours.

Specifications

- Operation hours counter.
- Software version reading.
- Error buffer reading and erasing.
- Software alignments.
- Test pattern generation.

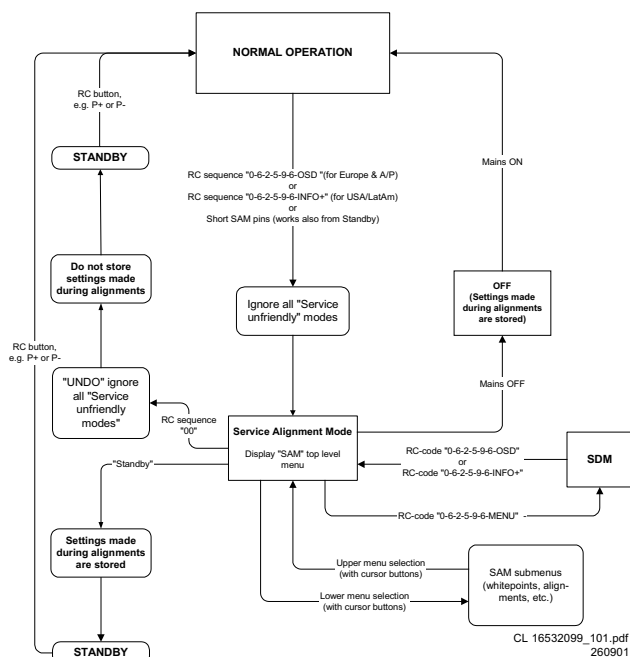


Figure 5-2 SAM Flowchart

How to enter

Use one of the following methods:

- Use a standard RC-transmitter and key in the code **0 6 2 5 9 6** directly followed by the **OSD (i+)** button.
Note: the OSD (i+) is not available on the original FM23 remote control, therefore use another Philips remote control (e.g. MG, EMG or A10).
- Short jumpers 3 and 4 of connector 0382 on the SCAVIO panel.

The following screen is visible:

Service Alignment Menu	General
Type nr. - AG Code	32FD9944/01S (example)
SW version OTC	AAAABC-X.Y xxxxx
SW version PW	AAAABC-X.Y xxxxx
SW version EPLD	AAAABC-X.Y xxxxx
Errors 1	xx xx xx xx xx
Errors 2	xx xx xx xx xx
Operational hours	xx
Reset error buffer	Press OK to reset
Store	Press OK to store

CL 16532099_102.pdf
260901

Figure 5-3 SAM Menu 'General'

- Type Nr.** Gives the commercial type number of the monitor, e.g. 32FD9944/01S.
- AG Code.** Is not implemented.
- SW Version OTC** (AAAABC-X.Y-xxxxx).
Note: You will find details of the latest software versions in the chapter 'Software Survey' of the 'Product Survey - Colour Television' publication, which is published four times each year.
 - A = the chassis name (FM23 for 32" displays or FM24 for 42" displays).
 - B = the region (E= Europe, A= Asia Pacific, U= NAFTA, L= LATAM or G = Global).
 - C = the configuration name (B= Basic, E= Enhanced).
 - X = the main software version number.
 - Y = the sub software version number.
 - x = last five digits of 12nc code.
- SW Version PW** (AAAABC-X.Y-xxxxx). See description above.
- SW Version EPLD** (AAAABC-X.Y-xxxxx). See description above.

- Errors 1.** Gives the last five errors of the error buffer. The last detected error is displayed at the most left position. The errors are displayed as 2 digit numbers and separated by a space. When less than 10 errors occurred, the rest of the line(s) is empty. In case of no errors the text 'No Errors' is displayed behind menu item 'Errors 1'. See paragraph 5.5 for a description.
- Errors 2.** Gives the first five errors of the error buffer. The last detected error is displayed at the most left position.
- Operational hours.** The Operations Hours indicate the time that the display was active with half an hour resolution. It represents the system hours (OTC), not the PDP hours.
- Reset error buffer.** Erase the contents of the error buffer. Press 'OK' on your remote control to activate. The content of the error buffer is cleared.
- Store.** This will store the performed alignments. Press 'OK' on your remote control to activate.
Note: if you do not want to store the performed alignments, leave the SAM mode via code 0 0 on your remote control. Do not activate the 'store' item.

How to navigate

Use one of the following methods:

- Select the sub-menu's (upper line) with the CURSOR LEFT/RIGHT keys on the remote control transmitter.
- Select the menu items with the CURSOR UP/DOWN keys. With the CURSOR LEFT/RIGHT keys it is possible to:
 - Activate the selected menu item.
 - Change the value of the selected menu item.
- To toggle to the SDM mode, use the standard customer RC-transmitter and key in the code **0 6 2 5 9 6**, directly followed by the MENU key.

How to exit

Use one of the following methods:

- Switch the set 'off' (with the Mains switch or by pulling the Mains cord).
Note: new alignment settings are always stored, even when item 'store' was not activated!
- Switch the set to 'standby' by pressing the power button on the remote control transmitter.
Note: new alignment settings are always stored, even when item 'store' was not activated!
- Use the standard RC-transmitter and key in the code **0 0**.
Note: new alignment settings are not stored (except when item 'store' was activated)!

5.2.3 Customer Service Mode (CSM)**Purpose**

When a customer is having problems with his TV-set, he can call his dealer or helpdesk. The service technician can then ask the customer to activate the CSM, in order to identify the status of the set. Now, the service technician can judge the severeness of the complaint. In many cases, he can advise the customer how to solve the problem, or he can decide if it is necessary to visit the customer.
The CSM is a read only mode, therefore modifications in this mode are not possible.

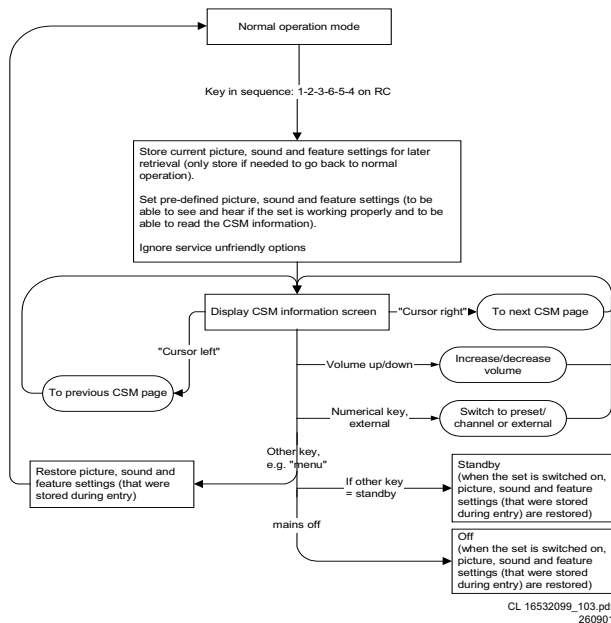


Figure 5-4 CSM Flowchart

How to enter

Use the standard customer RC-transmitter and key in the code 1 2 3 6 5 4.

When CSM is entered, the values of brightness, contrast, etc. are set to 50% (of max. value), and volume is set to 25%, to ensure that you always have a picture and sound.

After switching 'on' the Customer Service Mode, the following screen will appear:

Customer Service Menu 1 ■		
1	Type Nr. AG Code	32FD9944/01S AG02 (example)
2	SW Version OTC	AAAABC X.Y_XXXX
3	SW Version PW	AAAABC X.Y_XXXX
4	SW Version EPLD	AAAABC X.Y_XXXX
5	Code 1	xx xx xx xx xx
6	Code 2	xx xx xx xx xx
7	Volume	xx
8	Brightness	xx
9	Contrast	xx

Customer Service Menu 2 ■		
10	Colour	xx
11	Tint	xx
12	Sharpness	xx
13	Soundmode	xx
14	Source	xx
15	AV Mute	xx

CL 16532099_104.eps
270901

Figure 5-5 CSM Menu

- Type Nr. - AG Code.** Gives the commercial type number of the monitor, e.g. 32FD9944/01S. AG Code is not implemented.
- SW Version OTC (AAAABC-X.Y-xxxxx)**
Note: You will find details of the latest software versions in the chapter 'Software Survey' of the 'Product Survey - Colour Television' publication, which is published four times each year.
 - A = the chassis name (FM23 for 32" displays or FM24 for 42" displays).
 - B = the region (E= Europe, A= Asia Pacific, U= NAFTA, L= LATAM or G = Global).
 - C = the configuration name (B= Basic, E= Enhanced).

- X = the main software version number.
- Y = the sub software version number.
- x = last five digits of 12nc code.

- SW Version PW (AAAABC-X.Y-xxxxx).** See description above.
- SW Version EPLD (AAAABC-X.Y-xxxxx).** See description above.
- Code 1.** Gives the last five errors of the error buffer. The last detected error is displayed at the most left position. The errors are displayed as 2 digit numbers and separated by a space. When less than 10 errors occurred, the rest of the line(s) is empty. In case of no errors, the text "No Errors" is displayed behind menu item "Code 1". See paragraph 5.5 for a description.
- Code 2.** Gives the first five errors of the error buffer. The last detected error is displayed at the most left position.
- Volume.** Gives the last volume status for the selected source, as set by the customer.
- Brightness.** Gives the last brightness status for the selected source, as set by the customer.
- Contrast.** Gives the last contrast status for the selected source, as set by the customer.
- Colour** (not present in *Basic* configuration). Gives the last colour status for the selected source, as set by the customer.
- Tint** (only for *NTSC Enhanced* configuration). Gives the last tint status for the selected source, as set by the customer.
- Sharpness.** Gives the last sharpness status for the selected source, as set by the customer.
- Source.** Gives the selected source, as set by the customer.
- AV Mute.** Indicates if AV Mute is 'on' or 'off'.

How to navigate

Use one of the following methods:

- Switch to the other CSM page with the CURSOR LEFT/ RIGHT keys on the remote control.
- You can increase/decrease volume with the VOLUME UP/ DOWN keys on the remote control.
- You can switch to another source with the NUM/EXT keys on the remote control.

How to exit

Use one of the following methods:

- Press the MENU key of the remote control transmitter.
- Switch the set to 'standby' with the Power switch on the remote control.
- Switch the set 'off' with the Mains power switch.

5.3 Problems and Solving Tips (Related to CSM)**5.3.1 Picture Problems**

Note: Below described problems are all related to the monitor settings. The procedures to change the value (or status) of the different settings are described.

Picture too dark or too bright

Increase/decrease the BRIGHTNESS and/or the CONTRAST value when the picture improves after you have switched on the Customer Service Mode. The new value is automatically stored.

White line around picture elements and text

Decrease the SHARPNESS value when the picture improves after you have switched on the Customer Service Mode. The new value is automatically stored.

Snowy picture and/or unstable picture

A scrambled or decoded signal is received.

Black and white picture

Increase the COLOUR value when the picture improves after you have switched on the Customer Service Mode. The new value is automatically stored.

Menu text not sharp enough

Decrease the CONTRAST value when the picture improves after you have switched on the Customer Service Mode. The new value is automatically stored.

5.3.2 Sound Problems**No sound from left or right speaker**

Check item 'Volume' in the CSM mode. If value is low, increase the volume level. The new value is automatically stored.

No sound or sound too loud (after channel change/switching on)

Increase/decrease the VOLUME level when the volume is OK after you switched on the CSM. The new value is automatically stored.

5.4 ComPair**5.4.1 Introduction**

ComPair (Computer Aided Repair) is a service tool for Philips Consumer Electronics products. ComPair is a further development on the European DST (Dealer Service Tool), which allows faster and more accurate diagnostics. ComPair has three big advantages:

- ComPair helps you to quickly get an understanding on how to repair the chassis in a short time by guiding you systematically through the repair procedures.
- ComPair allows very detailed diagnostics (on I²C level) and is therefore capable of accurately indicating problem areas. You do not have to know anything about I²C commands yourself because ComPair takes care of this.
- ComPair speeds up the repair time since it can automatically communicate with the chassis (when the microprocessor is working) and all repair information is directly available. When ComPair is installed together with the SearchMan electronic manual of the defective chassis, schematics and PWBs are only a mouse click away.

5.4.2 Specifications

ComPair consists of a Windows based faultfinding program, and an RS232 cable between PC and the (defective) product.

The ComPair faultfinding program is able to determine the problem of the defective monitor. ComPair can gather diagnostic information in two ways:

- **Automatic** (by communication with the monitor): ComPair can automatically read out the contents of the entire error buffer. Diagnosis is done on I2C level. ComPair can send and receive commands to the micro controller of the monitor, and so can access the I2C bus of the monitor. In this way, it is possible for ComPair to communicate (read and write) to devices on the I2C busses of the FTV monitor.
- **Manually** (by asking questions to you): Automatic diagnosis is only possible if the micro controller of the monitor is working correctly and only to a certain extend. When this is not the case, ComPair will guide you through the faultfinding tree by asking you questions (e.g. *Does the screen give a picture? Click on the correct answer: YES / NO*) and showing you examples (e.g. *Measure test-point F7 and click on the correct oscillogram you see on the oscilloscope*). You can answer by clicking on a link (e.g. text or a waveform picture) that will bring you to the next step in the faultfinding process.

By a combination of automatic diagnostics and an interactive question / answer procedure, ComPair will enable you to find most problems in a fast and effective way.

Beside fault finding, ComPair provides some additional features like:

- Software upgrading (upload possible to OTC and PW Scaler).
- Emulation of the (European) Dealer Service Tool (DST).
- If both ComPair and SearchMan (Electronic Service Manual) are installed, all the schematics and the PWBs of the set are available by clicking on the appropriate hyperlink.

Example: Measure the DC-voltage on capacitor C2228 (Schematic/Panel) of the SCAVIO panel. Click on the 'Panel' hyperlink to automatically show the PWB with a highlighted capacitor C2568. Click on the 'Schematic' hyperlink to automatically show the position of the highlighted capacitor.

5.4.3 How to Connect

1. First, install the ComPair Browser software on your PC (read the installation instructions carefully).
2. Connect an RS232 interface cable between a free serial (COM) port on your PC and the RS232 connector on the FM23 plasma monitor.
3. Switch the plasma monitor 'off' and 'on' again (with the Mains switch).
4. Start the ComPair program and follow the instructions.

Note: once the set is in ComPair mode, the front LED will blink red, at a frequency of 0.3 Hz.

5.4.4 How to Order

ComPair order codes:

- Starter kit ComPair32 software (registration version): 3122 785 60040
- ComPair32 CD (update): 3122 785 60070
- Starter kit SearchMan32 software: 3122 785 60050
- SearchMan32 CD (update): 3122 785 60080

Note: The RS232 cable is not included. It is a standard cable (9p sub-D male-to-female) that can be obtained by a computer store. It is supplied however with the ComPair interface (4822 727 21631), necessary for servicing other Philips TVs.

5.5 Error Buffer

The error code buffer contains all detected errors since the last time the buffer was erased. The buffer is written from left to right. When an error occurs that is not yet in the error code buffer, it is written at the left side and all other errors shift one position to the right.

5.5.1 How to Read the Error Buffer

Use one of the following methods:

- On screen via the SAM (only if you have a picture).
Examples:
 - Errors: **6 0 0 0 0**, error code 6 is the last and only detected error.
 - Errors: **9 6 0 0 0**, error code 6 was first detected and error code 9 is the last detected (newest) error.
- Via the blinking LED procedure (when you have no picture). See paragraph 5.7.
- Via ComPair.

5.5.2 How to Clear the Error Buffer

The error code buffer is cleared in the following cases:

- By activation of the 'Reset error buffer' command in the SAM menu.
- When you transmit the code **0 6 2 5 9 9** with a standard remote control transmitter.

5.5.3 Error Codes

Table 5-1 Error code overview

Error	Device	Description	Item	Dia-gr.
1	TEA6422D	Audio switch (only Enhanced)	7798	SC13
2	MSP3451G	Sound processor	7812	SC14
3	PCF8574-SCAVIO	I/O expander SCAVIO	7540	SC8
4	PCF8591	AD-DA expander	7530	SC8
5	FS6377	Clock generator	7570	SC9
6	PCF8574-PSU	I/O expander PSU	7370	P3
7	24C16 OTC	NVM OTC	7430	SC7
8	24C16 PW	NVM PW	7580	SC9
9	SAA7118	Video decoder (only Enhanced)	7225	SC5
10	AD9887	ADC/TMDS receiver	7170	SC4
11	SDA9400	De-interlacer (only Enhanced)	7280	SC5
12	EP1K30QC	EPLD processor	7656	SC11
13	PDP	I2C error of the PDP		
20	Download comm.	Errors during downloading		
21	CSP comm.	CSP time-out error		
30	PDP	Display HW error		
40	Temperature alarm	Detection of over-temperature		
70	Vs overvoltage	Overvoltage on Vs, Va, +3V3, +5V or a combination	7341	P3
71	Vs undervoltage	Undervoltage on Vs	7308A/B	P3
72	Va undervoltage	Undervoltage on Va	7308C/D	P3
73	+5V undervoltage	Undervoltage on +5V	7330A/B	P3
74	+3V3 undervoltage	Undervoltage on +3V3	7330C/D	P3
75	DC-PROT	Audio amplifier protection	7362	P3
76	TEMP-PSU	Over-temperature in PSU	7366A	P3
77	Protection with reason unknown	No valid protection can be read, but protection is active (PSU)		
78	Protection after several retries	PW Scaler will not start comm. with OTC after several retries.		
9x	OTC	Internal OTC error. Replace.	7383	SC7

Notes:

- In case of non-intermittent faults, clear the error buffer before you begin the repair. This to ensure that old error codes are no longer present.
- If possible, check the entire contents of the error buffer. In some situations, an error code is only the result of another error code and not the actual cause (e.g., a fault in the protection detection circuitry can also lead to a protection).

Error-codes ≥ 10 are shown as follows:

1. n long blinks of 750 ms, which is/are an indication of the decimal digit,
2. a pause of 1.5 s,
3. n short blinks (n = 1-9),
4. when all the error-codes are displayed, the sequence finishes with a LED blink of 3 s,
5. the sequence starts again.

5.6 The Blinking LED Procedure

Via this procedure, you can make the contents of the error buffer visible via the front LED (orange colour). This is especially useful when there is no picture. When no errors are present, the LED will stay green.

When the SDM is entered, or when code **0 6 2 5 0 0** is entered with the remote control, the LED will blink the contents of the error-buffer.

Example of error buffer: **12 9 6 0 0**

After entering SDM:

1. 1 long blink of 750 ms followed by a pause of 1.5 s,
2. 2 short blinks followed by a pause of 3 s,
3. 9 short blinks followed by a pause of 3 s,
4. 6 short blinks followed by a pause of 3 s,
5. 1 long blink of 3 s to finish the sequence,
6. the sequence starts again.

5.7 Protections

You can read the error codes of the error buffer via the service menu (SAM), the blinking LED procedure, or via ComPair. If a fault situation is detected an error code will be generated and if necessary, the set will be put in the protection mode. Blinking of the red LED at a frequency of 5 Hz indicates the protection mode.

In some error cases, the microprocessor does not put the set in the protection mode. The error codes are indicated by an orange front LED.

To get a quick diagnosis the chassis has three service modes implemented:

- The Customer Service Mode (CSM): easy way to read out the status of the set.
- The Service Default Mode (SDM): start-up of the set in a predefined way.
- The Service Alignment Mode (SAM): adjustment of the set via a menu and with the help of test patterns.

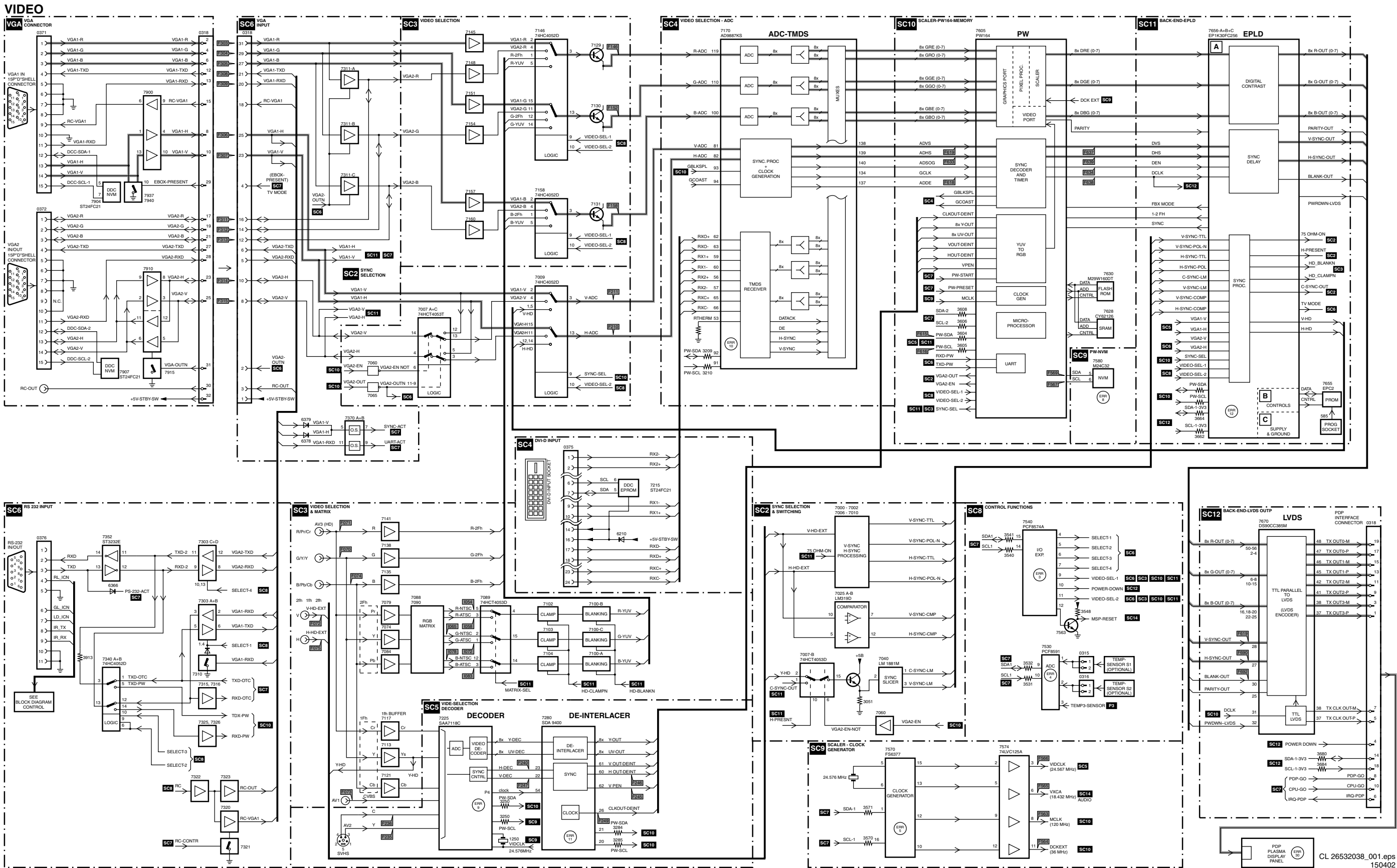
5.8 Repair Tips

Below some failure symptoms are given, followed by a repair tip.

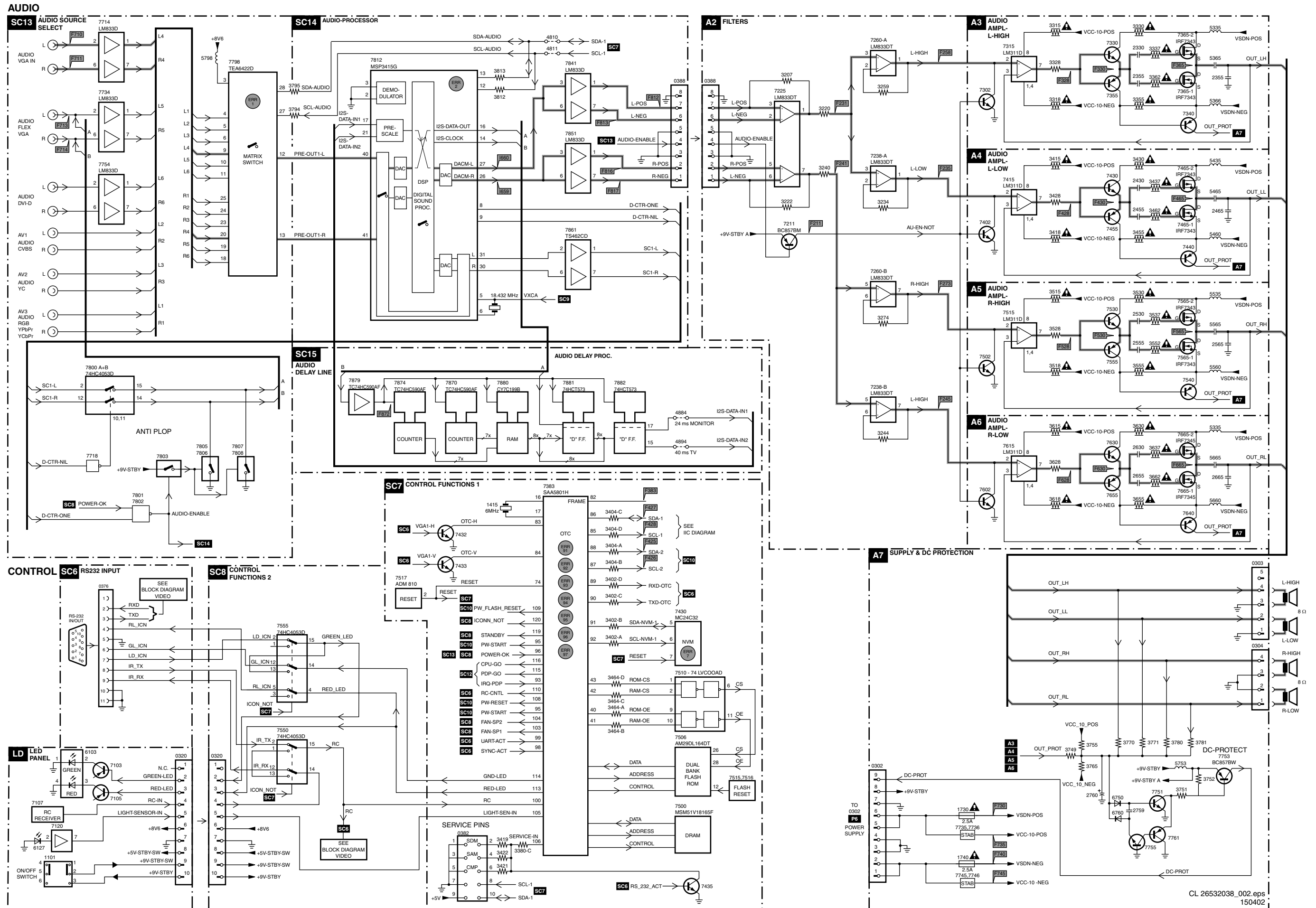
- **Error code indicates an under- or overvoltage protection (errors 70 - 74).** Possible causes:
 - Short-circuit present on PSU.
 - Short-circuit present in PSU load circuit.
 - Converter not functioning (no start-up, or non short-circuit failure).
- **Set starts up, but switches 'off' soon.**
 1. Check the PSU outputs. If no output at all, verify the Power Factor Corrector (= PFC or pre-conditioner) e.g. the relays. When PFC is not switching, the LLC is actively held off.
 2. If PFC works, check VCEGO.
 3. If VCEGO is high, check LLC (VS_UNSW).
 4. If no VS, check pin 15.
 5. If voltage is OK, check pins 12 and 14.
 6. If no pulses, check controller pin 10.
 7. If pin 10 < 1 V, the IC is probably defect.
- **If fuse 1004 (diagram P5) is blown.** Check items 7005 and 7006. If one of them is defect, replace both!
- **If fuse 1400 (diagram P2) is blown.** Check diode bridge 6600, diodes 6606 and 6607 and MOSFET 7610.
- **Set does not react on Remote Control Transmitter.** If the monitor is set (by accident or deliberate) in ICONN-mode (via SAM - Options), and there is no ICONN-Box connected, the RC-signal line to the OTC is interrupted. This can be solved by connecting pin 8 and 9 of the RS232 connector at the rear of the monitor.

6. Block Diagrams, Testpoint Overviews and Wiring Diagram

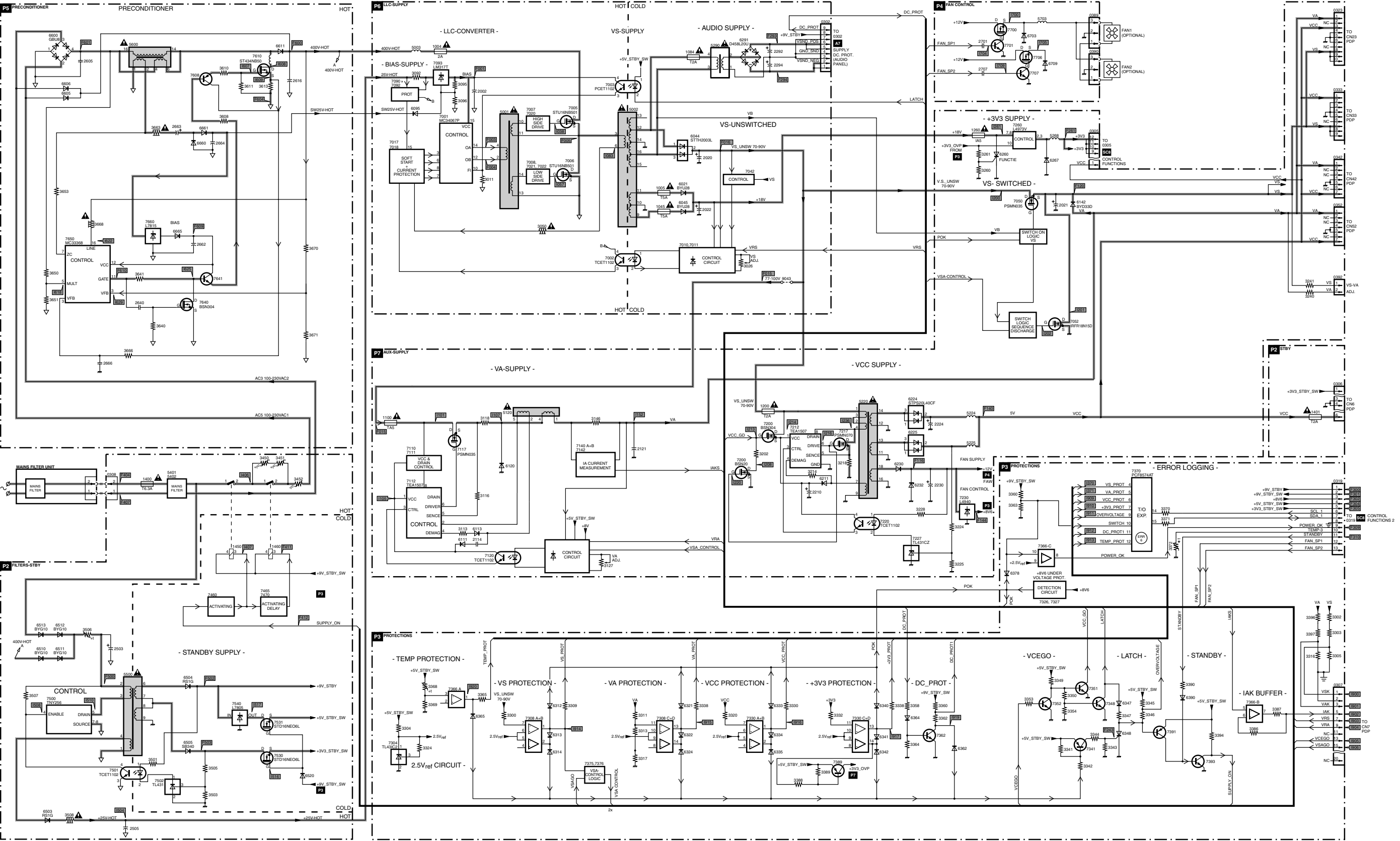
Block Diagram Video



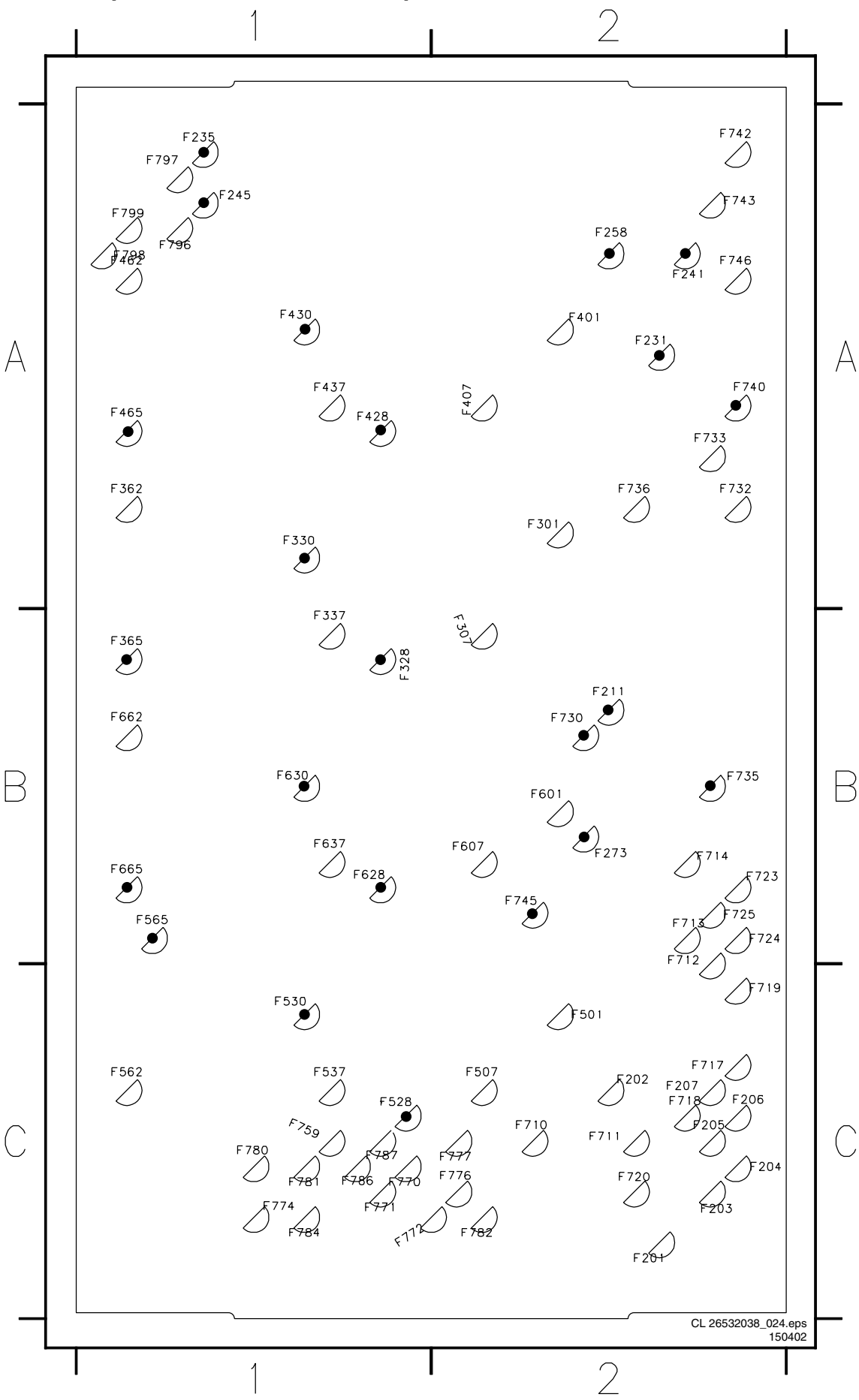
Block Diagram Audio



Block Diagram Power Supply



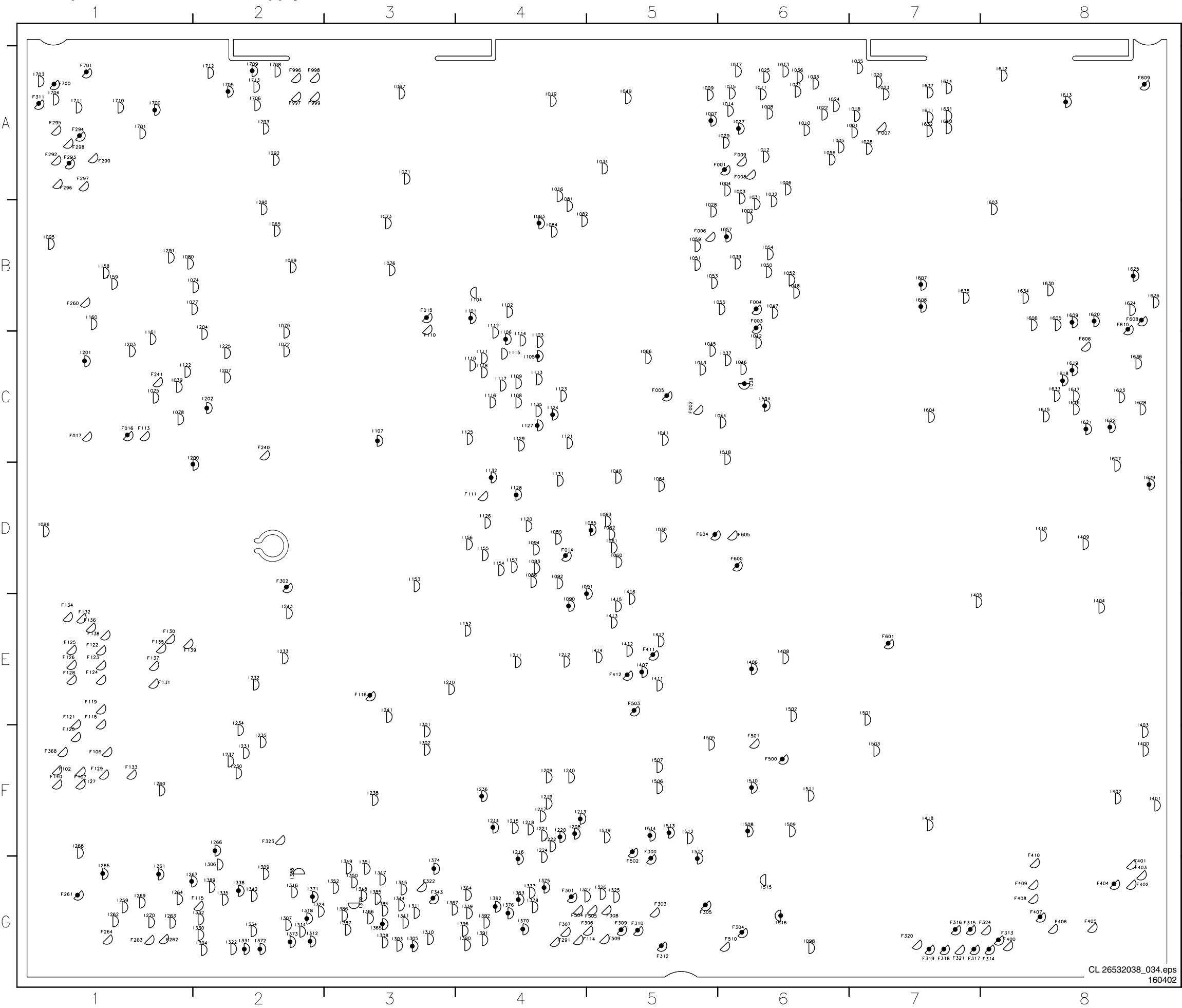
Testpoint Overview Audio Amplifier Panel



Mapping Testpoints Power Supply

F001 A6	F319 G8	I019 A5	I059 B6	I104 B4	I201 C1	I265 G1	I339 G4	I401 F9	I606 B8	I710 A2
F002 C6	F320 G8	I019 A5	I059 B6	I104 B4	I201 C1	I265 G1	I339 G4	I401 F9	I606 B8	I710 A2
F003 B6	F321 G8	I020 A7	I060 D5	I105 C5	I202 C2	I266 F2	I341 G4	I402 F9	I607 B8	I711 A1
F004 B6	F322 G4	I020 A7	I060 D5	I105 C5	I202 C2	I266 F2	I341 G4	I402 F9	I607 B8	I711 A1
F005 C6	F323 F3	I021 A7	I061 D5	I106 B4	I203 C2	I267 G2	I342 G3	I403 E9	I608 B8	I712 A2
F006 B6	F343 G4	I021 A7	I061 D5	I106 B4	I203 C2	I267 G2	I342 G3	I403 E9	I608 B8	I712 A2
F007 A7	F368 F1	I022 A7	I062 D5	I107 C3	I204 B2	I268 F1	I344 G4	I404 D9	I609 B9	I713 A3
F008 A6	F400 G8	I022 A7	I062 D5	I107 C3	I204 B2	I268 F1	I344 G4	I404 E9	I609 B9	I713 A3
F009 A6	F401 F9	I023 A7	I063 D5	I108 C5	I207 C2	I269 G2	I345 G4	I405 D8	I610 A8	I900 G7
F014 D5	F402 G9	I023 A7	I063 D5	I108 C5	I207 C2	I269 G2	I345 G4	I405 D8	I610 A8	I901 G7
F015 B4	F403 G9	I024 A7	I064 D6	I109 C5	I208 F5	I270 G2	I347 G4	I406 E6	I611 A8	I902 G7
F016 C2	F404 G9	I024 A7	I064 D6	I109 C5	I208 F5	I270 G2	I347 G4	I406 E6	I611 A8	I903 G7
F017 C1	F405 G9	I025 A6	I065 B3	I110 C4	I209 F5	I290 A3	I348 G3	I407 E5	I612 A8	I904 G7
F102 F1	F406 G9	I025 A6	I065 B3	I110 C4	I209 F5	I290 A3	I348 G3	I407 E5	I612 A8	I905 G7
F106 F1	F407 G9	I026 A7	I066 C6	I111 C4	I210 E4	I291 B2	I349 F3	I408 E7	I613 A8	I906 G8
F107 F1	F408 G8	I026 A7	I066 C6	I111 C4	I210 E4	I291 B2	I349 F3	I408 E7	I613 A8	
F110 B4	F409 G8	I027 A6	I067 A4	I112 B4	I211 E5	I292 A3	I350 G3	I409 D9	I614 A9	
F111 D4	F410 F8	I027 A6	I067 A4	I112 B4	I211 E5	I292 A3	I350 G3	I409 D9	I614 A9	
F113 C2	F411 E6	I028 A6	I069 B3	I113 C5	I212 E5	I293 A3	I351 F3	I410 D9	I615 C9	
F114 G5	F412 E5	I028 B6	I069 B3	I113 C5	I212 E5	I293 A3	I351 G3	I410 D9	I615 C9	
F115 G2	F500 F7	I029 A6	I070 B3	I114 B5	I213 F5	I300 E2	I352 G3	I411 E6	I616 C9	
F116 E3	F501 F6	I029 A6	I070 B3	I114 B5	I213 F5	I300 E2	I352 G3	I411 E6	I616 C9	
F118 E1	F502 F5	I030 D6	I071 A4	I115 C4	I214 F4	I301 E4	I362 G4	I412 E5	I617 C9	
F119 E1	F503 E5	I030 D6	I071 A4	I115 C4	I214 F4	I301 E4	I362 G4	I412 E5	I617 C9	
F120 F1	F504 G5	I031 A6	I072 C3	I116 C4	I215 F5	I302 F4	I363 G5	I413 E5	I618 C9	
F121 E1	F505 G5	I031 A6	I072 C3	I116 C4	I215 F5	I302 F4	I363 G5	I413 E5	I618 C9	
F122 E1	F509 G5	I032 A6	I073 B4	I117 C4	I216 F5	I303 G4	I364 G4	I414 E5	I619 C9	
F123 E1	F510 G6	I032 A6	I073 B4	I117 C4	I216 F5	I303 G4	I364 G4	I414 E5	I619 C9	
F124 E1	F600 D6	I033 A7	I074 B2	I118 C4	I217 F5	I304 G2	I365 G4	I415 D5	I620 B9	
F125 E1	F601 E7	I033 A7	I074 B2	I118 C4	I217 F5	I304 G2	I365 G4	I415 D5	I620 B9	
F126 E1	F604 D6	I034 A5	I075 C2	I120 D5	I218 F5	I305 G4	I366 G3	I416 D5	I621 C9	
F127 F1	F605 D6	I034 A5	I075 C2	I120 D5	I218 F5	I305 G4	I366 G3	I416 D5	I621 C9	
F128 E1	F606 C9	I035 A7	I076 B4	I121 C5	I219 F5	I306 G3	I367 G4	I417 E6	I622 C9	
F129 F1	F608 B9	I035 A7	I076 B4	I121 C5	I219 F5	I306 G3	I367 G4	I417 E6	I622 C9	
F130 E2	F609 A9	I036 A7	I077 B2	I122 C2	I220 F5	I307 G3	I370 G5	I418 F8	I623 C9	
F131 E2	F610 B9	I036 A7	I077 B2	I122 C2	I220 F5	I307 G3	I370 G5	I418 F8	I623 C9	
F132 E1	F700 A1	I037 C6	I078 C2	I123 C5	I221 F5	I308 G4	I371 G3	I501 E7	I624 B9	
F133 F2	F701 A1	I037 C6	I078 C2	I123 C5	I221 F5	I308 G4	I371 G3	I501 E7	I624 B9	
F134 E1	F996 A3	I038 C6	I079 C2	I124 C5	I222 F5	I309 G3	I372 G3	I502 E7	I625 B9	
F135 E2	F997 A3	I038 C6	I079 C2	I124 C5	I222 F5	I309 G3	I372 G3	I502 E7	I625 B9	
F136 E1	F998 A3	I039 B6	I080 B2	I125 C4	I224 F5	I310 G4	I373 G3	I503 F7	I626 B9	
F137 E2	F999 A3	I039 B6	I080 B2	I125 C4	I224 F5	I310 G4	I373 G3	I503 F7	I626 B9	
F138 E1	I001 A7	I040 C5	I081 A5	I126 D4	I225 C2	I311 G4	I374 F4	I504 C6	I627 C9	
F139 E2	I001 A7	I040 D5	I081 A5	I126 D4	I225 C2	I311 G4	I374 G4	I504 C6	I627 C9	
F140 F1	I002 B6	I041 C6	I082 B5	I127 C5	I230 F2	I312 G3	I375 G5	I505 F6	I628 C9	
F260 B1	I002 B6	I041 C6	I082 B5	I127 C5	I230 F2	I312 G3	I375 G5	I505 F6	I628 C9	
F261 G1	I003 A6	I042 B6	I083 B5	I128 D5	I231 F2	I313 G3	I376 G4	I506 F6	I629 D9	
F262 G2	I003 A6	I042 C6	I083 B5	I128 D5	I231 F2	I313 G3	I376 G4	I506 F6	I629 D9	
F263 G2	I004 A6	I043 C6	I084 B5	I129 C5	I232 E3	I314 G3	I377 G5	I507 F6	I630 B9	
F264 G1	I004 A6	I043 C6	I084 B5	I129 C5	I232 E3	I314 G3	I377 G5	I507 F6	I630 B9	
F290 A1	I005 A7	I044 C6	I085 D5	I131 D5	I233 E3	I315 G3	I378 G5	I508 F6	I631 A8	
F291 G5	I005 A7	I044 C6	I085 D5	I131 D5	I233 E3	I315 G3	I378 G5	I508 F6	I631 A8	
F292 A1	I006 A7	I045 C6	I088 D5	I132 C4	I234 E2	I316 G3	I380 G3	I509 F7	I632 A8	
F293 A1	I006 A7	I045 C6	I088 D5	I132 D4	I234 E2	I316 G3	I380 G3	I509 F7	I632 A8	
F294 A1	I007 A6	I046 C6	I089 D5	I135 C5	I235 F3	I318 G3	I383 G3	I510 F6	I633 C9	
F295 A1	I007 A6	I046 C6	I089 D5	I135 C5	I235 F3	I318 G3	I383 G3	I510 F6	I633 C9	
F296 A1	I008 A6	I047 B6	I090 D5	I152 E4	I236 F4	I322 G2	I384 G3	I511 F7	I634 B8	
F297 A1	I008 A6	I047 B6	I090 E5	I152 E4	I236 F4	I322 G2	I384 G3	I511 F7	I634 B8	
F298 A1	I009 A6	I048 B7	I091 D5	I153 D4	I237 F2	I324 G3	I385 G3	I512 F6	I635 B8	
F300 F6	I009 A6	I048 B7	I091 D5	I153 D4	I237 F2	I324 G3	I385 G3	I512 F6	I635 B8	
F301 G5	I010 A7	I049 A5	I092 D5	I154 D4	I238 F3	I325 G5	I386 G3	I513 F6	I636 C9	
F302 D3	I010 A7	I049 A5	I092 D5	I154 D4	I238 F3	I325 G5	I386 G3	I513 F6	I636 C9	
F303 G6	I011 A6	I050 B6	I093 D5	I155 D4	I240 F5	I326 G5	I387 G3	I514 F6	I700 A2	
F304 G6	I011 A6	I050 B6	I093 D5	I155 D4	I240 F5	I326 G5	I387 G3	I514 F6	I700 A2	
F305 G6	I012 A6	I051 B6	I094 D5	I156 D4	I241 E4	I327 G5	I388 G3	I515 G6	I701 A2	
F306 G5	I012 A6	I051 B6	I094 D5	I156 D4	I241 E4	I327 G5	I388 G3	I515 G6	I701 A2	
F307 G5	I013 A7	I052 B7	I095 B1	I157 D5	I243 E3	I330 G2	I389 G2	I516 G7	I703 A1	
F308 G5	I013 A7	I052 B7	I095 B1	I157 D5	I243 E3	I330 G2	I389 G2	I516 G7	I703 A1	
F309 G5	I014 A6	I053 B6	I096 D1	I158 B1	I260 F2	I331 G2	I390 G4	I517 F6	I704 A1	
F310 G5	I014 A6	I053 B6	I096 D1	I158 B1	I260 F2	I331 G2	I390 G4	I517 F6	I704 A1	
F311 A1	I015 A6	I054 B6	I098 G7	I159 B1	I261 G2	I332 G2	I391 G4	I518 C6	I705 A2	
F312 G6	I015 A6	I054 B6	I098 G7	I159 B1	I261 G2	I332 G2	I391 G4	I518 C6	I705 A2	
F313 G8	I016 A5	I055 B6	I101 B4	I160 B1	I262 G1	I334 G3	I392 G4	I603 A8	I706 A3	
F314 G8	I016 A5	I055 B6	I101 B4	I160 B1	I262 G1	I334 G3	I392 G4	I603 A8	I706 A3	
F315 G8	I017 A6	I056 A7	I102 B4	I161 B2	I263 G2	I335 G2	I396 G4	I604 C8	I708 A3	
F316 G8	I017 A6	I056 A7	I102 B4	I161 B2	I263 G2	I335 G2	I396 G4	I604 C8	I708 A3	
F317 G8	I018 A7	I057 B6	I103 B5	I161 B2	I264 G2	I338 G2	I400 F9	I605 B9	I709 A3	
F318 G8	I018 A7	I057 B6	I103 B5	I161 B2	I264 G2	I338 G2	I400 F9	I605 B9	I709 A3	

Testpoint Overview Power Supply

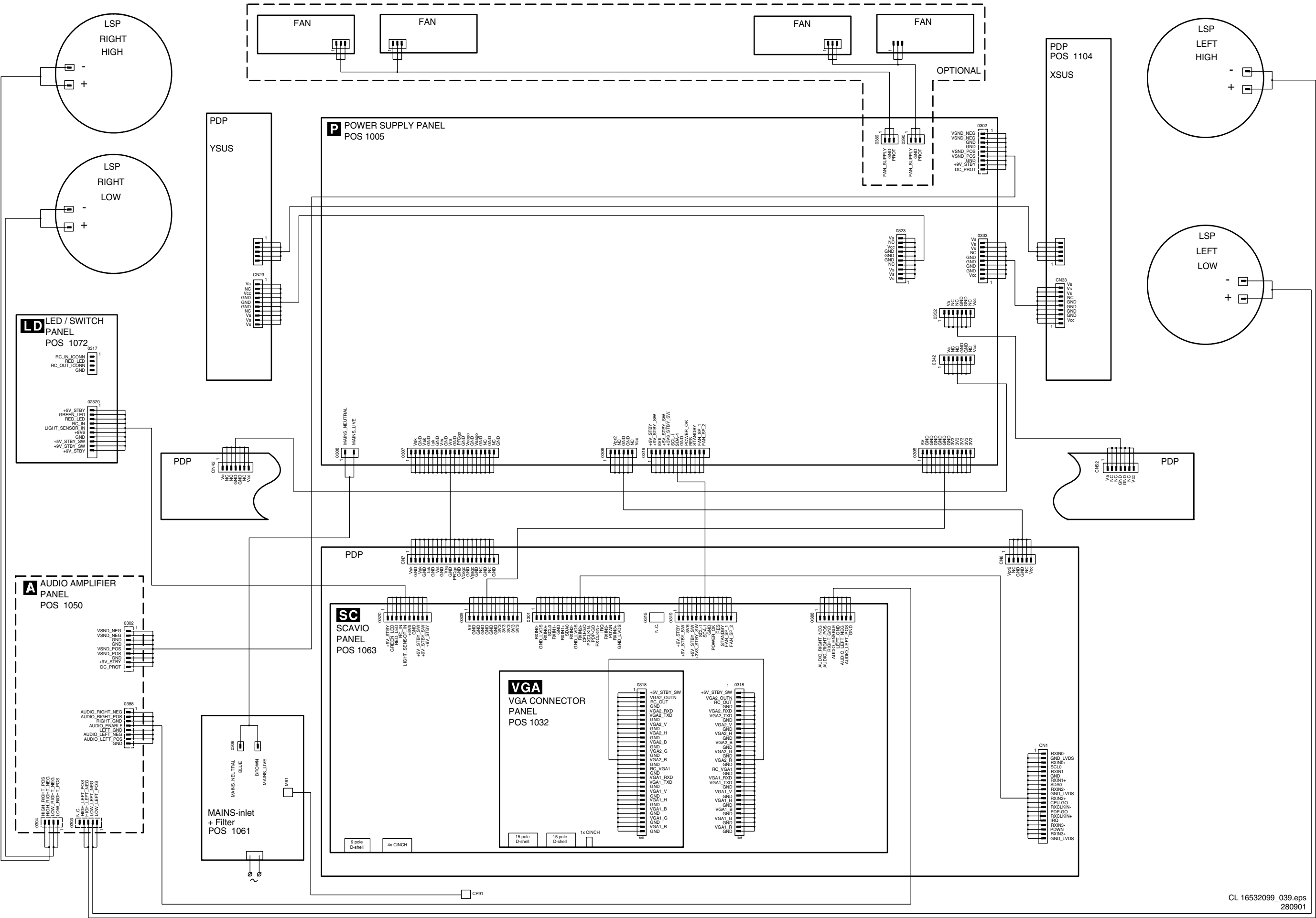


F001	A6	I007	A6	I075	C2	I204	B2	I325	G5	I501	E7	I904	G7
F002	C6	I007	A6	I075	C2	I204	B2	I325	G5	I501	E7	I905	G7
F003	B6	I008	A6	I076	B4	I207	C2	I326	G5	I502	E7	I906	G8
F004	B6	I008	A6	I076	B4	I207	C2	I326	G5	I502	E7	I906	G8
F005	C6	I009	A6	I077	B2	I208	F5	I327	G5	I503	F7		
F006	B6	I009	A6	I077	B2	I208	F5	I327	G5	I503	F7		
F007	A7	I010	A7	I078	C2	I209	F5	I330	G2	I504	C6		
F008	A6	I010	A7	I078	C2	I209	F5	I330	G2	I504	C6		
F009	A6	I011	A6	I079	C2	I210	E4	I331	G2	I505	F6		
F010	D5	I011	A6	I079	C2	I210	E4	I331	G2	I505	F6		
F015	C6	I012	A6	I080	B2	I211	E5	I332	G2	I506	F6		
F016	C2	I012	A6	I080	B2	I211	E5	I332	G2	I506	F6		
F017	C1	I013	A7	I081	A5	I212	E5	I334	G3	I507	F6		
F102	F1	I013	A7	I081	A5	I212	E5	I334	G3	I507	F6		
F106	F1	I014	A6	I082	B5	I213	F5	I335	G2	I508	F6		
F107	F1	I014	A6	I082	B5	I213	F5	I335	G2	I508	F6		
F110	B4	I015	A6	I083	B5	I214	F4	I338	G2	I509	F7		
F111	D4	I015	A6	I083	B5	I214	F4	I338	G2	I509	F7		
F113	C2	I016	A5	I084	B5	I215	F5	I339	G4	I510	F6		
F114	G5	I016	A5	I084	B5	I215	F5	I339	G4	I510	F6		
F115	G2	I017	A6	I085	D5	I216	F5	I341	G4	I511	F7		
F116	E3	I017	A6	I085	D5	I216	F5	I341	G4	I511	F7		
F118	E1	I018	A7	I088	D5	I217	F5	I342	G3	I512	F6		
F119	E1	I018	A7	I088	D5	I217	F5	I342	G3	I512	F6		
F120	F1	I019	A5	I089	D5	I218	F5	I344	G4	I513	F6		
F121	E1	I019	A5	I089	D5	I218	F5	I344	G4	I513	F6		
F122	E1	I020	A7	I090	D5	I219	F5	I345	G4	I514	F6		
F123	E1	I020	A7	I090	D5	I219	F5	I345	G4	I514	F6		
F124	E1	I021	A7	I091	D5	I220	F5	I347	G4	I515	G6		
F125	E1	I021	A7	I091	D5	I220	F5	I347	G4	I515	G6		
F126	E1	I022	A7	I092	D5	I221	F5	I348	G3	I516	G7		
F127	F1	I022	A7	I092	D5	I221	F5	I348	G3	I516	G7		
F128	E1	I023	A7	I093	D5	I222	F5	I349	G3	I517	F6		
F129	F1	I023	A7	I093	D5	I222	F5	I349	G3	I517	F6		
F130	E2	I024	A7	I094	D5	I224	F5	I350	G3	I518	C6		
F131	E2	I024	A7	I094	D5	I224	F5	I350	G3	I518	C6		
F132	E1	I025	A6	I095	B1	I225	C2	I351	F3	I603	A8		
F133	F2	I025	A6	I095	B1	I225	C2	I351	F3	I603	A8		
F134	E1	I026	A7	I096	D1	I230	F2	I352	G3	I604	C8		
F135	E2	I026	A7	I096	D1	I230	F2	I352	G3	I604	C8		
F136	E1	I027	A6	I098	G7	I231	F2	I362	G4	I605	B9		
F137	E2	I027	A6	I098	G7	I231	F2	I362	G4	I605	B9		
F138	E1	I028	A6	I101	B4	I232	E3	I363	G5	I606	B8		
F139	E2	I028	B6	I101	B4	I232	E3	I363	G5	I606	B8		
F140	F1	I029	A6	I102	B4	I233	E3	I364	G4	I607	B8		
F260	B1	I029	A6	I102	B4	I233	E3	I364	G4	I607	B8		
F261	G1	I030	D6	I103	B5	I234	E2	I365	G4	I608	B8		
F262	G2	I030	D6	I103	C5	I234	E2	I365	G4	I608	B8		
F263	G2	I031	A6	I104	B4	I235	F3	I366	G3	I609	B9		
F264	G1	I031	A6	I104	B4	I235	F3	I366	G3	I609	B9		
F290	A1	I032	A6	I105	C5	I236	F4	I367	G4	I610	A8		
F291	G5	I032	A6	I105	C5	I236	F4	I367	G4	I610	A8		
F292	A1	I033	A7	I106	B4	I237	F2	I370	G5	I611	A8		
F293	A1	I033	A7	I106	B4	I237	F2	I370	G5	I611	A8		
F294	A1	I034	A5	I107	C3	I238	F3	I371	G3	I612	A8		
F295	A1	I034	A5	I107	C3	I238	F3	I371	G3	I612	A8		
F296	A1	I035	A7	I108	C5	I240	F5	I372	G3	I613	A8		
F297	A1	I035	A7	I108	C5	I240	F5	I372	G3	I613	A8		
F298	A1	I036	A7	I109	C5	I241	E4	I373	G3	I614	A9		
F300	F6	I036	A7	I109	C5	I241	E4	I373	G3	I614	A9		
F301	G5	I037	C6	I110	C4	I243	E3	I374	F4	I615	C9		
F302	D3	I037	C6	I110	C4	I243	E3	I374	F4	I615	C9		
F303	G6	I038	C6	I111	C4	I260	F2	I375	G5	I616	C9		
F304	G6	I038	C6	I111	C4	I260	F2	I375	G5	I616	C9		
F305	G6	I039	B6	I112	B4	I261	G2	I376	G4	I617	C9		
F306	G5	I039	B6	I112	B4	I261	G2	I376	G4	I617	C9		
F307	G5	I040	C5	I113	C5	I262	G1	I377	G5	I618	C9		
F308	G5	I040	D5	I113	C5	I262	G1	I377	G5	I618	C9		
F309	G5	I041	C6	I114	B5	I263	G2	I378	G5	I619	C9		
F310	G5	I041	C6	I114	B5	I263	G2	I378	G5	I619	C9		
F311	A1	I042	B6	I115	C4	I264	G2	I380	G3	I620	B9		
F312	G6	I042	C6	I115	C4	I264	G2	I380	G3	I620	B9		
F313	G8	I043	C6	I116	C4	I265	G1	I383	G3	I621	C9		
F314	G8	I043	C6	I116	C4	I265	G1	I383	G3	I621	C9		
F315	G8	I044	C6	I117	C4	I266	F2	I384	G3	I622	C9		
F316	G8	I044	C6	I117	C4	I266	F2	I384	G3	I622	C9		
F317	G8	I045	C6	I118	C4	I267	G2	I385	G3	I623	C9		
F318	G8	I045	C6	I118	C4	I267	G2	I385	G3	I623	C9		
F319	G8	I046	C6	I120	D5	I268	F1	I386	G3	I624	B9		
F320	G8	I046	C6	I120	D5	I268	F1	I386	G3	I624	B9		
F321	G8	I047	B6	I121	C5	I269	G2	I387	G3	I625	B9		
F322	G4	I047	B6	I121	C5	I269	G2	I387	G3	I625	B9		
F323	F3	I048	B7	I122	C2	I270	G2	I388	G3	I626	B9		
F343	G4	I048	B7	I122	C2	I270	G2	I388	G3	I626	B9		
F368	F1	I049	A5	I123	C5	I290	A3	I389	G2	I627	C9		
F400	G8	I049	A5	I123	C5	I290	A3	I389	G2	I627	C9		
F401	F9	I050	B6	I124	C5	I291	B2	I390	G4	I628	C9		
F402	G9	I050	B6	I124	C5	I291	B2	I390	G4	I628	C9		
F403	G9	I051	B6	I125	C4	I292	A3	I391	G4	I629	D9		
F404	G9	I051	B6	I125	C4	I292	A3	I391	G4	I629	D9		
F405	G9	I052	B7	I126	D4	I293	A3	I392	G4	I630	B9		
F406	G9	I052	B7	I126	D4	I293	A3	I392	G4	I630	B9		
F407	G9	I053	B6	I127	C5	I300	E2	I396	G4	I631	A8		
F408	G8	I053	B6	I127	C5	I300	E2	I396	G4	I631	A8		
F409	G8	I054	B6	I128	D5	I301	E4	I400	F9	I632	A8		
F410	F8	I054	B6	I128	D5	I301	E4	I400	F9	I632	A8		
F411	E6	I055	B6	I129	C5	I302	F4	I401	F9	I633	C9		
F412	E5	I055	B6	I129	C5	I302	F4	I401	F9	I633	C9		
F500	F7	I056	A7	I131	D5	I303	G4	I402	F9	I634	B8		
F501	F6	I056	A7	I131	D5	I303	G4	I402	F9	I634	B8		
F502	F5	I057	B6	I132	C4	I304	G2	I403	E9	I635	B8		
F503	E5	I057	B6	I132	C4	I304	G2	I403	E9	I635	B8		
F504	G5	I059	B6	I135	C5	I305	G4	I404	D9	I636	C9		
F505	G5	I059	B6	I135	C5	I305	G4	I404	D9	I636	C9		
F509	G5	I060	D5	I152	E4	I306	G3	I405	D8	I700	A2		
F510	G6	I060	D5	I152	E4	I306	G3	I405	D8	I700	A2		
F600	D6	I061	D5	I153	D4	I307	G3	I406	E6	I701	A2		
F601	E7	I061	D5	I153	D4	I307	G3	I406	E6	I701	A2		
F604	D6	I062	D5	I154	D4	I308	G4	I407	E5	I703	A1		
F605	D6	I062	D5	I154	D4	I308	G4	I407	E5	I703	A1		
F606	C9	I063	D5	I155	D4	I309	G3	I408	E7	I704	A1		
F607	C9	I063	D5	I155	D4	I309	G3	I408	E7	I704	A1		
F608	A9	I064	D6	I156	D4	I310	G4	I409	E9	I705	A2		
F609	B9	I064	D6	I156	D4	I310	G4	I409	E9	I705	A2		
F700	A1	I065	B3	I157	D5	I311	G4	I410	D9	I706	A3		
F701	A1	I065	B3	I157	D5	I311	G4	I410	D9	I706	A3		
F996	A3	I066	C6	I158	B1	I312	G3	I411	E8	I708	A3		
F997	A3	I066	C6	I158	B1	I312	G3	I411	E8	I708	A3		
F998	A3	I067	A4	I159	B1	I313	G3	I412	E5	I709	A3		
F999	A3	I067	A4	I159	B1	I313	G3	I412	E5	I709	A3		
I001	A7	I069	B3	I160	B1	I314	G3	I413	E5	I710	A2		
I002	B6	I070	B3	I161	B2	I315	G3	I414	E5	I711	A1		
I003	A6	I071	A4	I200	C2	I316	G3	I415	E5	I712	A2		
I004	A6	I071	A4	I200	C2	I316	G3	I415	E5	I712	A2		
I004	A6	I072	C3	I201	C1	I318	G3	I416	E5	I713	A2		
I005	A6	I072	C3	I201	C1	I318	G3	I416	E5	I713	A2		
I005	A7	I073	B4	I202	C2	I322	G2	I417	E8	I900	G7		
I005	A7	I073	B4	I202	C2	I322	G2	I417	E8	I900	G7		
I006	A7	I074	B2	I203	C2	I324	G3	I418	F8</				

Testpoint Overview SCAVIO

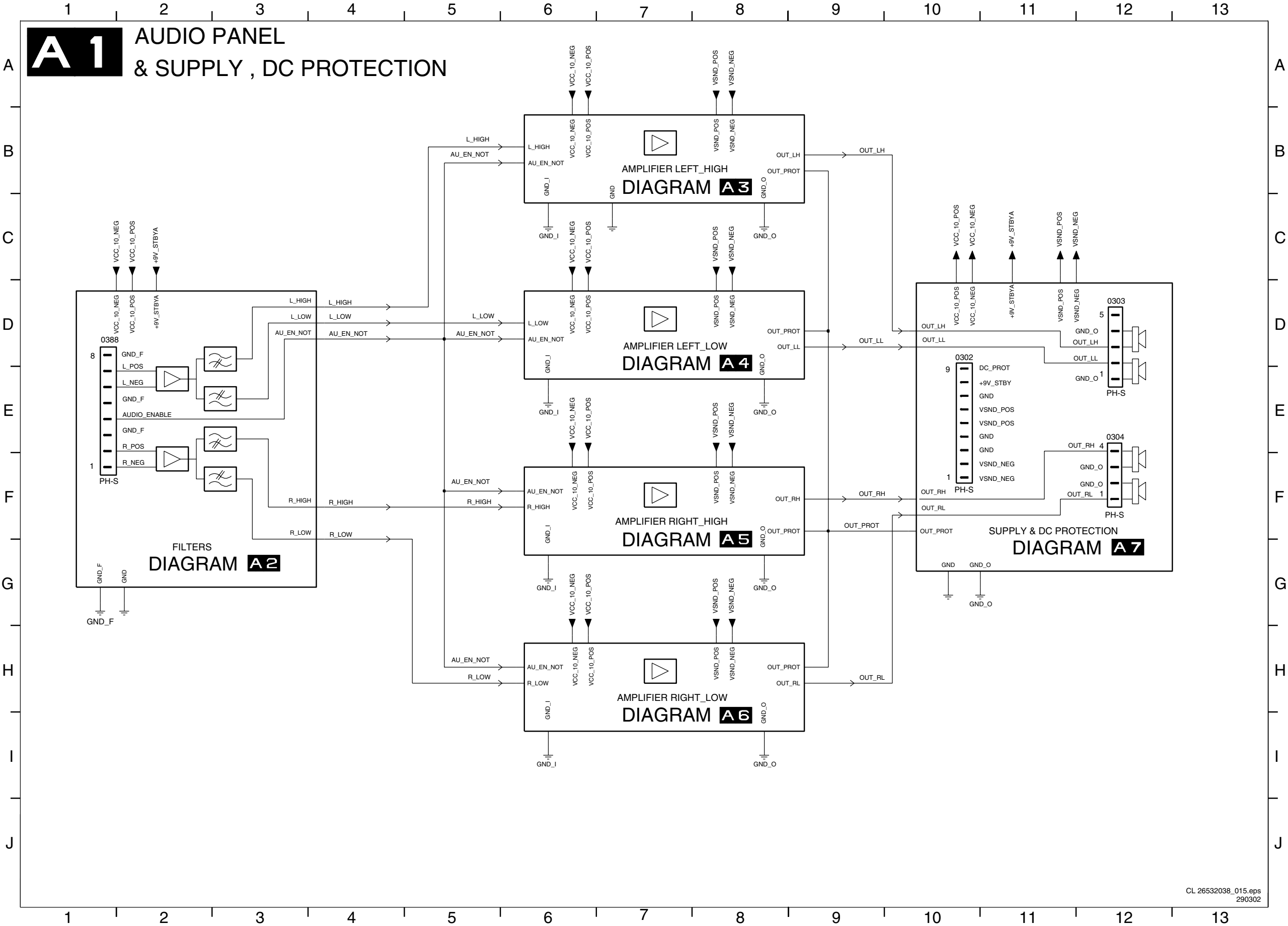
F070	C1	F177	C4	F225	A1	F251	B2	F312	B2	F383	B7	F401	B7	F419	B7	F459	C8	F477	C8	F496	B8	F537	A8	F555	A3	F573	A5	F591	A5	F609	A4	F630	A5	F648	A6	F673	A6	F711	C7	F813	A1	I006	B1	I024	B1	I054	B1	I072	B2	I101	B2	I119	B2	I156	B4	I222	C8	I240	B8	I258	B3	I276	B3	I294	B3	I359	C8	I432	A5	I531	C6	I549	C6	I567	C7	I585	C6	I653	B1	I671	B1
F070	C1	F177	C4	F225	A1	F251	B2	F312	B3	F383	C7	F401	B7	F419	B7	F459	C8	F477	C8	F496	B8	F538	A8	F556	A3	F574	A5	F592	A5	F610	A4	F630	A5	F649	B7	F674	A6	F712	C7	F814	A1	I007	C1	I025	A1	I055	B1	I073	B2	I102	B1	I120	A2	I157	B4	I223	C8	I241	A8	I259	A3	I277	B6	I295	B8	I360	C7	I433	A5	I532	C6	I550	C7	I568	C2	I586	C1	I654	A1	I672	B1
F071	C1	F178	C3	F226	A1	F260	C2	F313	B3	F384	B7	F402	B7	F420	B8	F460	B8	F478	B8	F497	A8	F539	A8	F557	A3	F575	A5	F593	A5	F611	A4	F631	A5	F650	A7	F675	A6	F713	C7	F815	A1	I008	C1	I026	A2	I056	C1	I074	B2	I103	B1	I121	A2	I158	C4	I224	B2	I242	A3	I260	A3	I278	A3	I296	B5	I361	C8	I435	A3	I533	C1	I551	B7	I569	C6	I587	C1	I655	B1	I673	B1
F072	C1	F180	C3	F227	A1	F261	B3	F314	B3	F385	B7	F403	B7	F421	B7	F461	B8	F479	C8	F506	B8	F539	A8	F557	A3	F575	A5	F593	A5	F611	A4	F632	A5	F651	A7	F676	A6	F714	C7	F816	A1	I009	B1	I027	A1	I057	C1	I075	B2	I104	B1	I122	B1	I159	C4	I225	B8	I243	A3	I261	A3	I279	C6	I344	B6	I362	C8	I436	A3	I534	C1	I552	B7	I570	B6	I588	B6	I656	B1	I674	B1
F073	C1	F181	C3	F228	A1	F262	B3	F315	B2	F386	B7	F404	B7	F422	B8	F462	B8	F480	A8	F507	B8	F540	A7	F558	A3	F576	A5	F594	A5	F612	A4	F632	A5	F651	A7	F676	A6	F714	C7	F816	A1	I009	B1	I027	A1	I057	C1	I075	B2	I104	B1	I122	B1	I159	C4	I225	B8	I243	A3	I261	A3	I279	C6	I344	B6	I362	C8	I436	A3	I534	C1	I552	B7	I570	B6	I588	B6	I656	B1	I674	B1
F073	C1	F181	C3	F228	A1	F262	C3	F315	B2	F386	B7	F404	B7	F422	B8	F462	B8	F480	A8	F520	B6	F541	A7	F559	A3	F577	A5	F595	A5	F613	A4	F634	A6	F652	A6	F677	A6	F715	C7	F817	A1	I010	C1	I028	B8	I058	B1	I076	C2	I105	C2	I123	B2	I160	C3	I226	B8	I244	A3	I262	A3	I280	A3	I345	B6	I363	B7	I480	A5	I535	B6	I553	C5	I571	C7	I589	C6	I657	A1	I675	A1
F074	C1	F196	B4	F229	A1	F263	B3	F316	B3	F387	B7	F405	B7	F423	B7	F463	B8	F481	A8	F521	B7	F542	A7	F560	A4	F578	A5	F596	A5	F614	A6	F635	B5	F653	A7	F678	A6	F716	C7	F820	B1	I011	B1	I029	A1	I059	C1	I077	C1	I106	B2	I124	B2	I161	C3	I227	C8	I245	C8	I263	A4	I281	B4	I346	B7	I364	B7	I481	A6	I536	B6	I554	C7	I572	C7	I590	C7	I658	A1	I676	A1
F075	C1	F197	B4	F230	A1	F264	B3	F317	B3	F388	B7	F406	B7	F424	B7	F464	B8	F482	B8	F522	B7	F543	A7	F561	A4	F579	A5	F597	A5	F614	A6	F635	B5	F653	A7	F678	A6	F716	C7	F820	B1	I011	B1	I029	A1	I059	C1	I077	C1	I106	B2	I124	B2	I161	C3	I227	C8	I245	C8	I263	A4	I281	B4	I346	B7	I364	B7	I481	A6	I536	B6	I554	C7	I572	C7	I590	C7	I658	A1	I676	A1
F075	C1	F197	B4	F230	A1	F264	C3	F317	B3	F388	B7	F406	B7	F424	B7	F464	B8	F482	B8	F522	B7	F543	A7	F561	A4	F579	A5	F597	A5	F614	A6	F635	B5	F653	A7	F678	A6	F716	C7	F820	B1	I011	B1	I029	A1	I059	C1	I077	C1	I106	B2	I124	B2	I161	C3	I227	C8	I245	C8	I263	A4	I281	B4	I346	B7	I364	B7	I481	A6	I536	B6	I554	C7	I572	C7	I590	C7	I658	A1	I676	A1
F076	C1	F198	C5	F231	A1	F265	B3	F318	B3	F389	B7	F407	B7	F425	B6	F465	B8	F483	B8	F522	B7	F543	A7	F561	A4	F579	A5	F597	A5	F615	A7	F636	B6	F654	B8	F679	A6	F717	C1	F820	A1	I012	C1	I030	B1	I060	C1	I078	B1	I107	C2	I125	B2	I162	C4	I228	B8	I246	C8	I264	A4	I282	A3	I347	B7	I365	C8	I482	A5	I537	C6	I555	C5	I573	C7	I591	C8	I659	B1		
F076	C1	F198	C5	F231	A1	F265	C3	F318	B3	F389	B7	F407	B7	F425	B6	F465	B8	F483	B8	F522	B7	F543	A7	F561	A4	F579	A5	F597	A5	F615	A7	F636	B6	F654	B8	F679	A6	F717	C1	F820	A1	I012	C1	I030	B1	I060	C1	I078	B1	I107	C2	I125	B2	I162	C4	I228	B8	I246	C8	I264	A4	I282	A3	I347	B7	I365	C8	I482	A5	I537	C6	I555	C5	I573	C7	I591	C8	I659	B1		
F076	C1	F198	C5	F231	A1	F265	C3	F318	B3	F389	B7	F407	B7	F425	B6	F465	B8	F483	B8	F522	B7	F543	A7	F561	A4	F579	A5	F597	A5	F615	A7	F636	B6	F654	B8	F679	A6	F717	C1	F820	A1	I012	C1	I030	B1	I060	C1	I078	B1	I107	C2	I125	B2	I162	C4	I228	B8	I246	C8	I264	A4	I282	A3	I347	B7	I365	C8	I482	A5	I537	C6	I555	C5	I573	C7	I591	C8	I659	B1		
F089	B1	F199	C4	F232	A1	F300	A4	F319	A2	F390	B7	F408	B7	F426	B6	F466	B8	F484	B8	F523	B7	F544	A7	F562	A3	F580	A5	F598	A5	F616	A7	F637	B6	F655	A8	F680	A7	F718	C2	F821	A1	I013	C1	I031	B1	I061	B2	I079	C1	I108	B2	I126	A2	I165	C3	I229	C8	I247	A3	I265	A3	I283	A3	I348	B7	I366	B7	I483	A5	I538	C1	I556	C5	I574	C6	I592	C6	I660	B1		
F089	B1	F199	C4	F232	A1	F300	A4	F319	A2	F390	B7	F408	B7	F426	C6	F466	B8	F484	B8	F524	B8	F545	A7	F563	A4	F581	A5	F599	A5	F617	A5	F638	A7	F656	A7	F681	A6	F719	C2	F822	A1	I014	B1	I032	B1	I062	C2	I080	C2	I109	B1	I127	A2	I166	C3	I230	A8	I248	A3	I266	B3	I284	B6	I349	B7	I400	A7	I485	A6	I539	C1	I557	C2	I575	C6	I593	C8	I661	B1		
F146	B4	F201	C5	F233	A1	F301	B4	F320	C8	F391	B7	F409	B7	F427	A7	F467	B8	F485	B8	F524	B8	F545	A7	F563	A4	F581	A5	F599	A5	F618	B4	F638	A7	F656	A7	F681	A6	F719	C2	F822	A1	I014	B1	I032	B1	I062	C2	I080	C2	I109	B1	I127	A2	I166	C3	I230	A8	I248	A3	I266	B3	I284	B6	I349	B7	I400	A7	I485	A6	I539	C1	I557	C2	I575	C6	I593	C8	I661	B1		
F146	B4	F201	C5	F233	A1	F301	B4	F320	C8	F391	B7	F409	B7	F427	A7	F467	B8	F485	B8	F525	B6	F546	A2	F564	A4	F582	A5	F600	A5	F619	B5	F639	B6	F657	A8	F682	A6	F720	C2	F873	A1	I015	B3	I033	A1	I063	C1	I081	C1	I110	B1	I128	B2	I200	C3	I231	B8	I249	C8	I267	A4	I285	B3	I350	B6	I401	A3	I486	A5	I540	C1	I558	C2	I576	C1	I594	C8	I662	B1		
F152	B4	F202	B4	F234	C2	F303	A3	F321	C8	F392	B7	F410	B7	F428	A7	F468	B8	F486	B8	F526	B6	F547	A2	F564	A4	F582	A5	F600	A5	F620	B5	F639	B6	F657	A8	F682	A6	F720	C2	F873	A1	I015	B3	I033	A1	I063	C1	I081	C1	I110	B1	I128	B2	I200	C3	I231	B8	I249	C8	I267	A4	I285	B3	I350	B6	I401	A3	I486	A5	I540	C1	I558	C2	I576	C1	I594	C8	I662	B1		
F152	B4	F202	B4	F234	C2	F303	A3	F321	C8	F392	B7	F410	B7	F428	A7	F468	B8	F486	B8	F526	B6	F547	A2	F564	A4	F582	A5	F600	A5	F620	B5	F639	B6	F657	A8	F682	A6	F720	C2	F873	A1	I015	B3	I033	A1	I063	C1	I081	C1	I110	B1	I128	B2	I200	C3	I231	B8	I249	C8	I267	A4	I285	B3	I350	B6	I401	A3	I486	A5	I540	C1	I558	C2	I576	C1	I594	C8	I662	B1		
F158	B4	F203	C5	F235	C2	F304	A3	F322	C8	F393	B7	F411	B7	F429	C8	F469	B8	F487	B8	F529	A7	F547	A2	F565	A4	F583	A4	F601	A5	F622	A5	F640	A8	F658	A8	F683	A6	F721	C1	F874	A1	I016	B5	I034	C1	I064	B1	I082	C1	I111	B1	I129	B3	I201	C2	I232	A8	I250	A3	I268	A4	I286	B3	I351	B6	I402	A3	I501	A7	I541	C7	I559	C7	I577	C1	I595	C6	I663	B1		
F158	B4	F203	C5	F235	C2	F304	A3	F322	C8	F393	B7	F411	B7	F429	C8	F469	B8	F487	B8	F530	A8	F548	A2	F566	A4	F584	A4	F602	A5	F622	A5	F641	A6	F659	A8	F684	A6	F722	C1	F875	A1	I017	A1	I035	C1	I065	B1	I083	B1	I112	B2	I130	B2	I202	C2	I233	B8	I251	A3	I269	A4	I287	B3	I352	A8	I405	A3	I502	A8	I542	C7	I560	C2	I578	C7	I596	B6	I664	B1		
F170	C5	F210	C3	F236	C3	F305	A3	F323	B3	F394	B7	F412	B7	F430	B6	F470	B8	F488	B8	F530	A8	F548	A2	F566	A4	F584	A4	F602	A5	F623	A6	F641	A6	F659	A8	F684	A6	F722	C1	F875	A1	I017	A1	I035	C1	I065	B1	I083	B1	I112	B2	I130	B2	I202	C2	I233	B8	I251	A3	I269	A4	I287	B3	I352	A8	I405	A3	I502	A8	I542	C7	I560	C2	I578	C7	I596	B6	I664	B1		
F170	C5	F211	C3	F236	C3	F305	A3	F323	B3	F394	B7	F412	B7	F430	B6	F470	B8	F488	B8	F531	A8	F549	A2	F567	B5	F585	A4	F																																																					

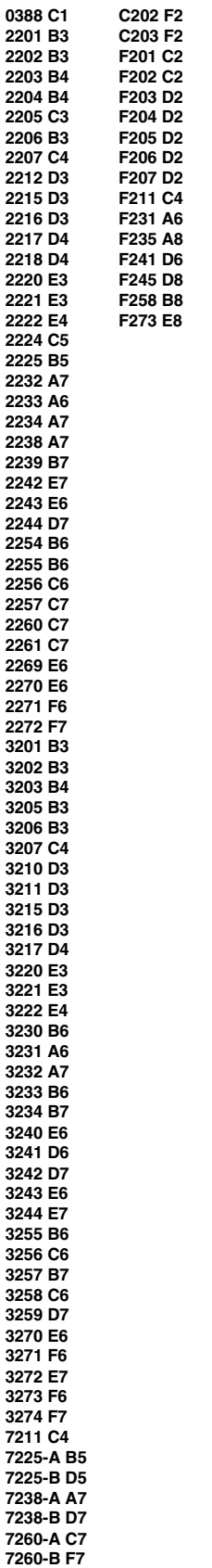
Wiring Diagram



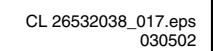
7. Electrical Diagrams and PWB Layouts

Audio Panel & Supply: DC Protection





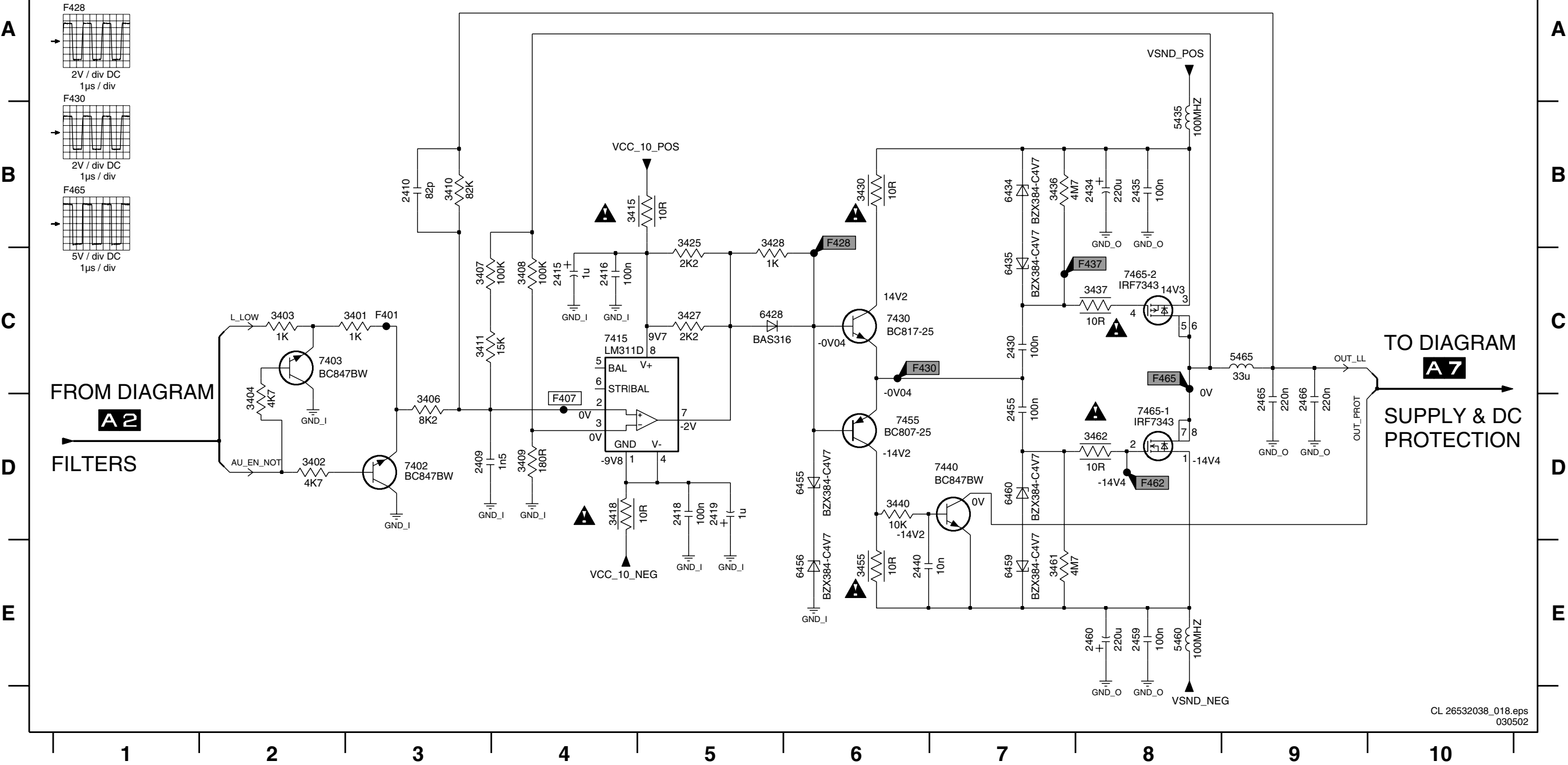
2309 D4	2316 C5	2330 C7	2340 E7	2360 E8	3301 C3	3304 D2	3308 C4	3311 C4	3325 B5	3330 B6	3340 D6	3362 D8	5365 C9	6335 C7	6359 E7	7303 C3	7340 D7	7365-2 C8	F301 C3	F330 C7	F365 C8
2310 B3	2318 D5	2334 B8	2355 D7	2365 C9	3302 D3	3306 C3	3309 D4	3315 B5	3327 C5	3336 B8	3355 E6	5335 B8	6328 C6	6355 D6	6360 D7	7315 C4	7355 D6	C301 E3	F307 C4	F337 C8	
2315 C4	2319 D5	2335 B8	2359 E8	2366 C9	3303 C2	3307 C4	3310 B3	3318 D5	3328 B6	3337 C8	3361 E8	5360 E8	6334 B7	6356 E6	7302 D3	7330 C6	7365-1 D8	C302 E3	F328 B6	F362 D8	



Audio Panel & Supply: Left Low

2409 D3	2416 C4	2430 C7	2440 E6	2460 E8	3401 C3	3404 D2	3408 C4	3411 C3	3425 B5	3430 B6	3440 D6	3462 D8	5465 C9	6435 C7	6459 E7	7403 C2	7440 D7	7465-2 C8	F428 B6	F462 D8
2410 B3	2418 D5	2434 B8	2455 D7	2465 D9	3402 D2	3406 C3	3409 D4	3415 B4	3427 C5	3436 B7	3455 E6	5435 B8	6428 C5	6455 D6	6460 D7	7415 C4	7455 D6	F401 C3	F430 C6	F465 C8
2415 C4	2419 D5	2435 B8	2459 E8	2466 D9	3403 C2	3407 C3	3410 B3	3418 D4	3428 B5	3437 C8	3461 E7	5460 E8	6434 B7	6456 E6	7402 D3	7430 C6	7465-1 D8	F407 D4	F437 C8	

A4 AUDIO AMPLIFIER LEFT LOW

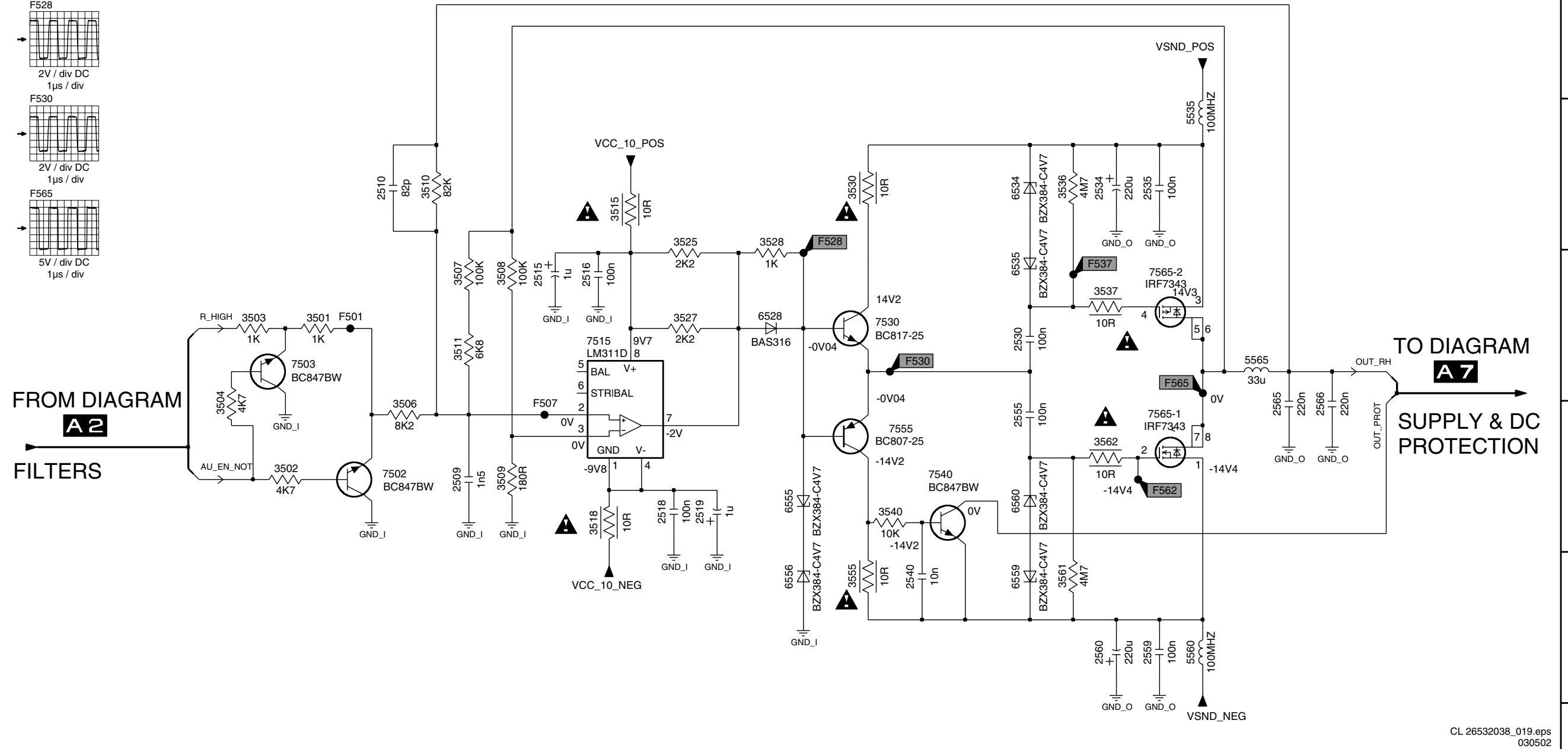


Audio Panel & Supply: Right High

2509 D3	2516 C4	2530 C7	2540 E6	2560 E8	3501 C2	3504 D2	3508 C4	3511 C3	3525 B5	3530 B6	3540 D6	3562 D8	5565 C9	6535 C7	6559 E7	7503 C2	7540 D7	7565-2 C8	F528 B6	F562 D8
2510 B3	2518 D5	2534 B8	2555 D7	2565 D9	3502 D2	3506 D3	3509 D4	3515 B4	3527 C5	3536 B7	3555 E6	5535 B8	6528 C5	6555 D6	6560 D7	7515 C4	7555 D6	F501 C3	F530 C6	F565 C8
2515 C4	2519 D5	2535 B8	2559 E8	2566 D9	3503 C2	3507 C3	3510 B3	3518 D4	3528 B5	3537 C8	3561 E7	5560 E8	6534 B7	6556 E6	7502 D3	7530 C6	7565-1 D8	F507 D4	F537 C8	

A5

AUDIO AMPLIFIER
RIGHT HIGH

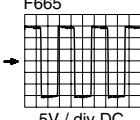
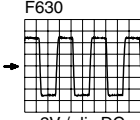
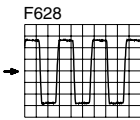


Audio Panel & Supply: Right Low

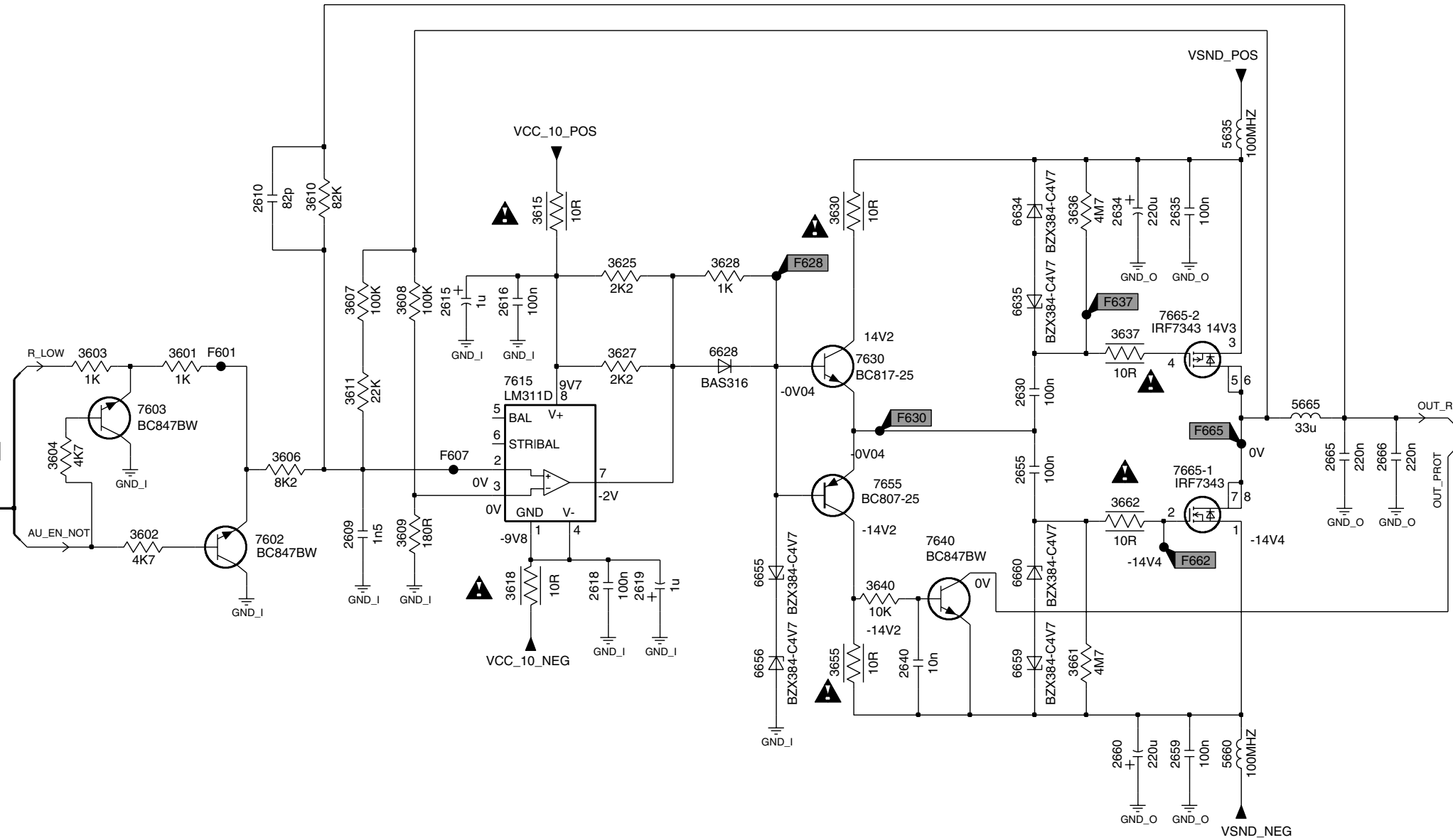
2609 D4	2616 C4	2630 C7	2640 E7	2660 E8	3601 C3	3604 C2	3608 C4	3611 C4	3625 B5	3630 B6	3640 D6	3662 D8	5665 C9	6635 C7	6659 E7	7603 C2	7640 D7	7665-2 C8	F628 B6	F662 D8
2610 B3	2618 D5	2634 B8	2655 C7	2665 C9	3602 D2	3606 C3	3609 D4	3615 B5	3627 C5	3636 B8	3655 E6	5635 B8	6628 C6	6655 D6	6660 D7	7615 C4	7655 D6	F601 C3	F630 C7	F665 C8
2615 C4	2619 D5	2635 B8	2659 E8	2666 C9	3603 C2	3607 C4	3610 B3	3618 D4	3628 B6	3637 C8	3661 E8	5660 E8	6634 B7	6656 E6	7602 D3	7630 C6	7665-1 D8	F607 C4	F637 C8	

A6

AUDIO AMPLIFIER
RIGHT LOW

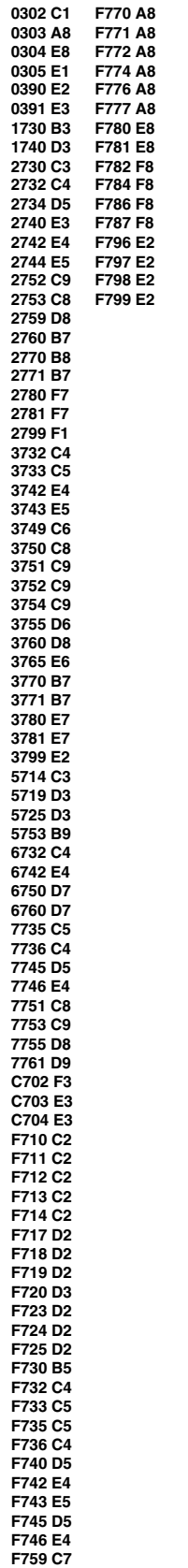


FROM DIAGRAM
A2
FILTERS



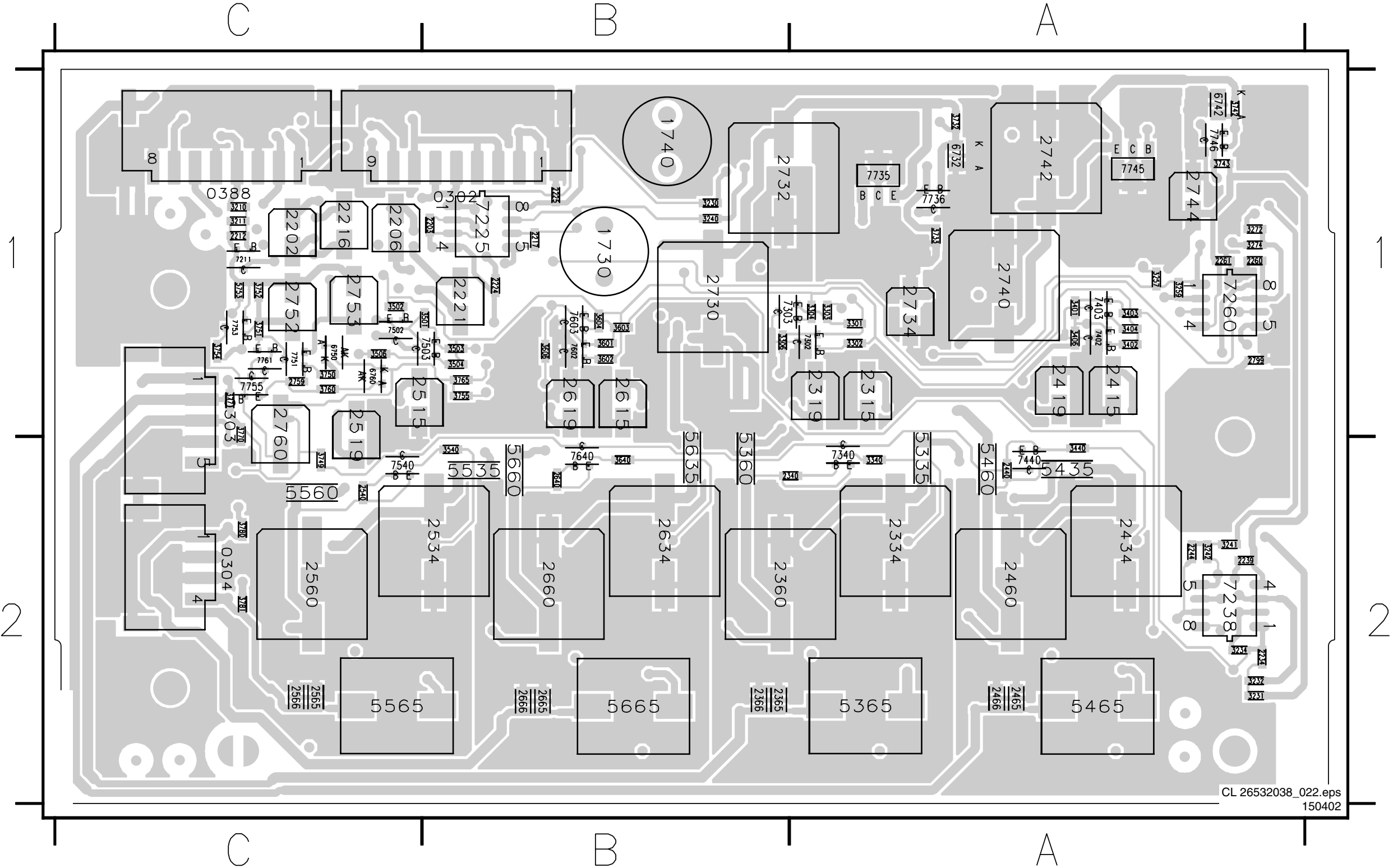
TO DIAGRAM
A7
SUPPLY & DC
PROTECTION

A 7 SUPPLY & DC PROTECTION



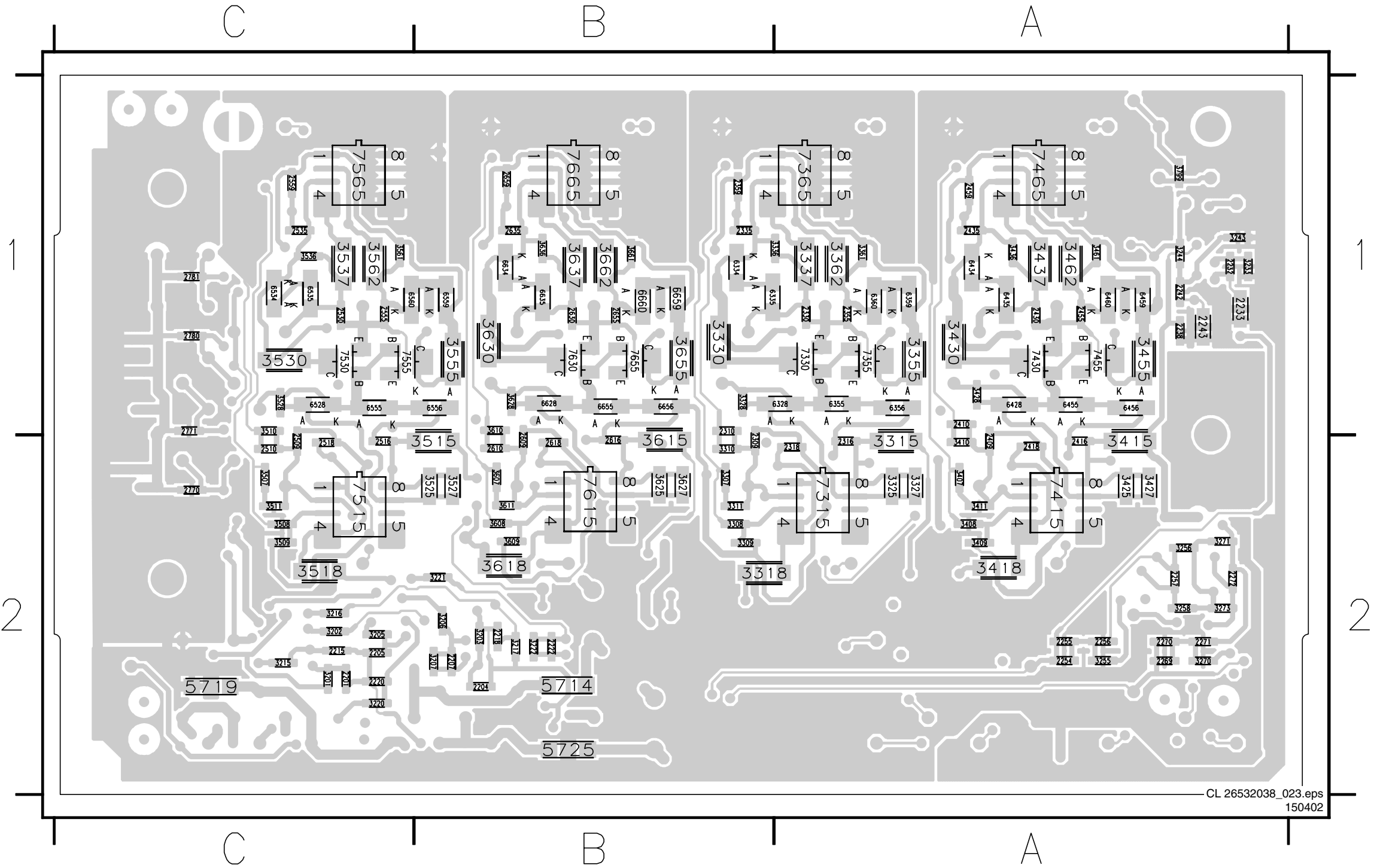
Layout Audio Panel (Top View)

0302	B1	2216	C1	2315	A1	2440	A2	2566	C2	2734	A1	3211	C1	3272	A1	3403	A1	3601	B1	3749	C2	3780	C2	5565	C2	7225	B1	7503	B1	7753	C1
0303	C1	2217	B1	2319	A1	2460	A2	2615	B1	2740	A1	3230	B1	3274	A1	3404	A1	3602	B1	3750	C1	3781	C2	5635	B2	7238	A2	7540	C2	7755	C1
0304	C2	2221	B1	2334	A2	2465	A2	2619	B1	2742	A1	3231	A2	3301	A1	3406	A1	3603	B1	3751	C1	5335	A2	5660	B2	7260	A1	7602	B1	7761	C1
0388	C1	2224	B1	2340	A2	2466	A2	2634	B2	2744	A1	3232	A2	3302	A1	3440	A2	3604	B1	3752	C1	5360	B2	5665	B2	7302	A1	7603	B1		
1730	B1	2225	B1	2360	B2	2515	C1	2640	B2	2752	C1	3234	A2	3303	A1	3501	B1	3606	B1	3754	C1	5365	A2	5753	C1	7303	B1	7640	B2		
1740	B1	2234	A2	2365	B2	2519	C1	2660	B2	2753	C1	3240	B1	3304	A1	3502	C1	3640	B2	3755	B1	5435	A2	6732	A1	7340	A2	7735	A1		
2202	C1	2239	A2	2366	B2	2534	B2	2665	B2	2759	C1	3241	A2	3306	B1	3503	B1	3732	A1	3760	C1	5460	A2	6742	A1	7402	A1	7736	A1		
2203	B1	2244	A2	2415	A1	2540	C2	2666	B2	2760	C1	3242	A2	3340	A2	3504	B1	3733	A1	3765	B1	5465	A2	6750	C1	7403	A1	7745	A1		
2206	C1	2260	A1	2419	A1	2560	C2	2730	B1	2799	A1	3257	A1	3401	A1	3506	C1	3742	A1	3770	C1	5535	B2	6760	C1	7440	A2	7746	A1		
2212	C1	2261	A1	2434	A2	2565	C2	2732	B1	3210	C1	3259	A1	3402	A1	3540	B2	3743	A1	3771	C1	5560	C2	7211	C1	7502	C1	7751	C1		



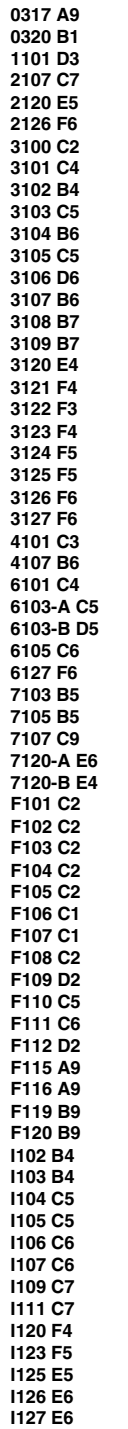
Layout Audio Panel (Bottom View)

2201	C2	2255	A2	2359	B1	2535	C1	2781	C1	3243	A1	3318	B2	3411	A2	3509	C2	3607	B2	3661	B1	6434	A1	6634	B1	7515	C2
2204	B2	2256	A2	2409	A2	2555	C1	3201	C2	3244	A1	3325	A2	3415	A2	3510	C1	3608	B2	3662	B1	6435	A1	6635	B1	7530	C1
2205	C2	2257	A2	2410	A1	2559	C1	3202	C2	3255	A2	3327	A2	3418	A2	3511	C2	3609	B2	3799	A1	6455	A1	6655	B1	7555	C1
2207	B2	2269	A2	2416	A2	2609	B2	3203	B2	3256	A2	3328	B1	3425	A2	3515	B2	3610	B1	5714	B2	6456	A1	6656	B1	7565	C1
2215	C2	2270	A2	2418	A2	2610	B2	3205	C2	3258	A2	3330	B1	3427	A2	3518	C2	3611	B2	5719	C2	6459	A1	6659	B1	7615	B2
2218	B2	2271	A2	2430	A1	2616	B2	3206	B2	3270	A2	3336	A1	3428	A1	3525	B2	3615	B2	5725	B2	6460	A1	6660	B1	7630	B1
2220	C2	2272	A2	2435	A1	2618	B2	3207	B2	3271	A2	3337	A1	3430	A1	3527	B2	3618	B2	6328	A1	6528	C1	7315	A2	7655	B1
2222	B2	2309	B2	2455	A1	2630	B1	3215	C2	3273	A2	3355	A1	3436	A1	3528	C1	3625	B2	6334	B1	6534	C1	7330	A1	7665	B1
2232	A1	2310	B1	2459	A1	2635	B1	3216	C2	3307	B2	3361	A1	3437	A1	3530	C1	3627	B2	6335	B1	6535	C1	7355	A1		
2233	A1	2316	A2	2509	C2	2655	B1	3217	B2	3308	B2	3362	A1	3455	A1	3536	C1	3628	B1	6355	A1	6555	C1	7365	A1		
2238	A1	2318	A2	2510	C2	2659	B1	3220	C2	3309	B2	3407	A2	3461	A1	3537	C1	3630	B1	6356	A1	6556	B1	7415	A2		
2242	A1	2330	A1	2516	C2	2770	C2	3221	B2	3310	B2	3408	A2	3462	A1	3555	B1	3636	B1	6359	A1	6559	B1	7430	A1		
2243	A1	2335	B1	2518	C2	2771	C1	3222	B2	3311	B2	3409	A2	3507	C2	3561	C1	3637	B1	6360	A1	6560	C1	7455	A1		
2254	A2	2355	A1	2530	C1	2780	C1	3233	A1	3315	A2	3410	A2	3508	C2	3562	C1	3655	B1	6428	A1	6628	B1	7465	A1		

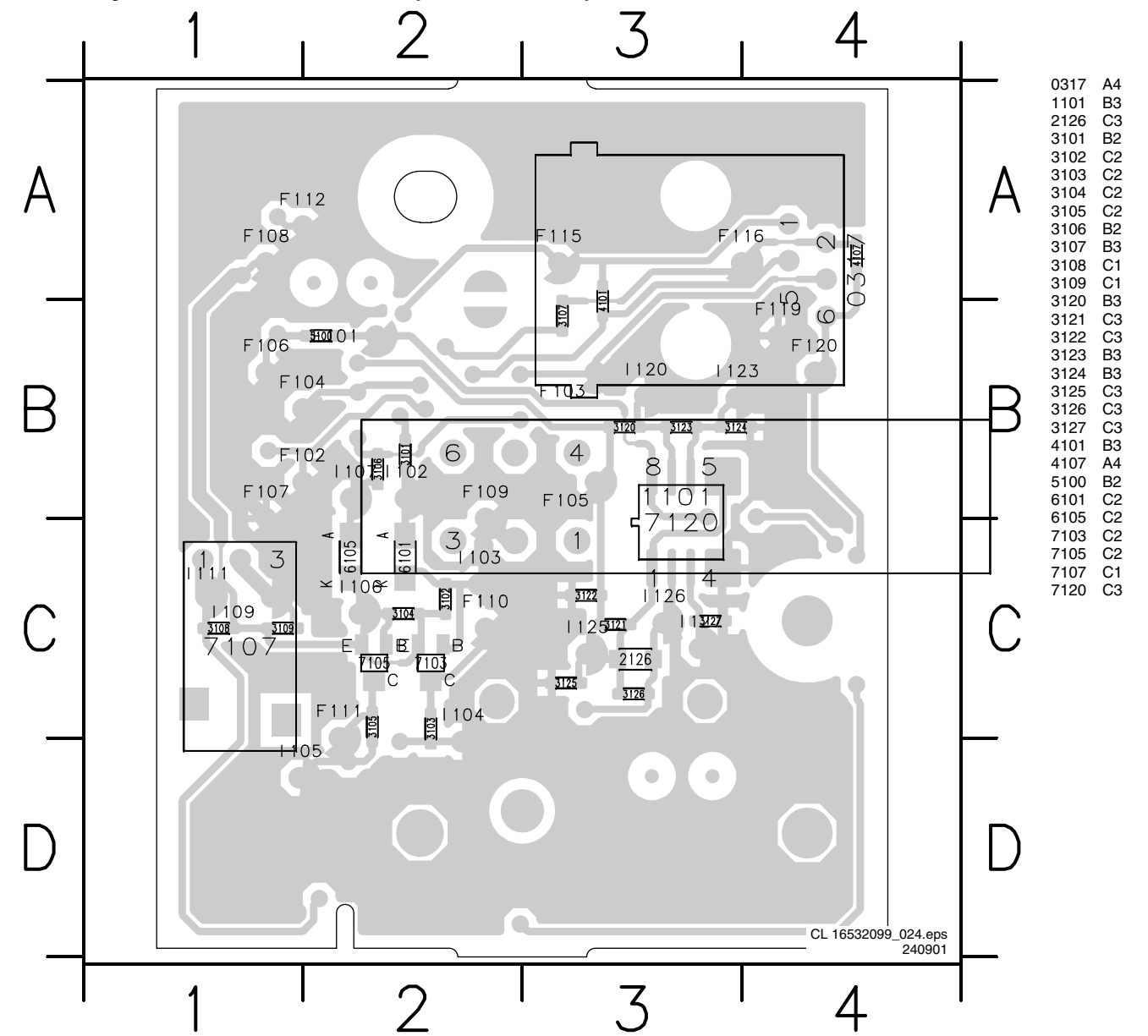
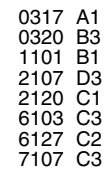


LD

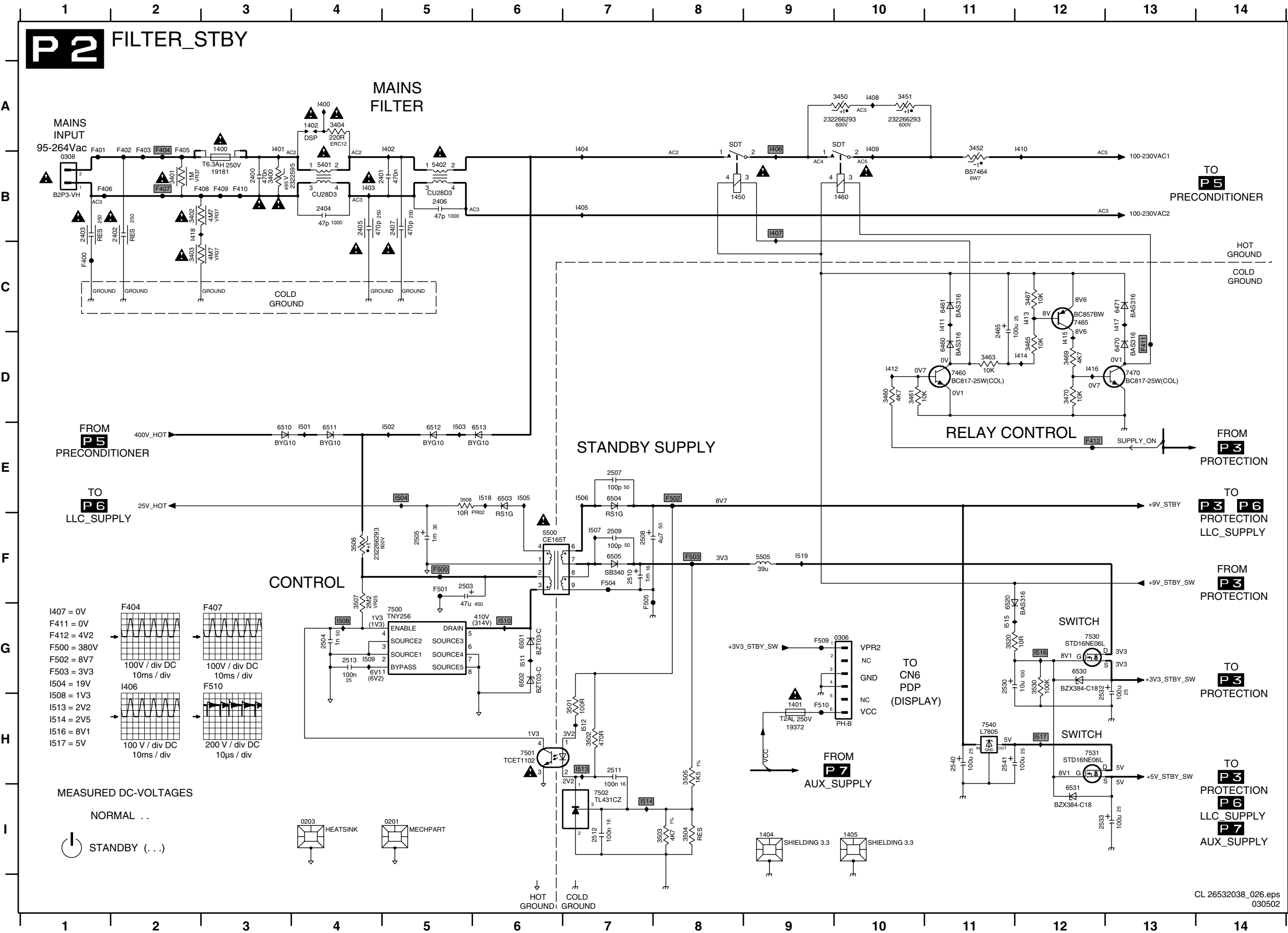
FROM
0320
SC8
CONTROLE
FUNCTIONS



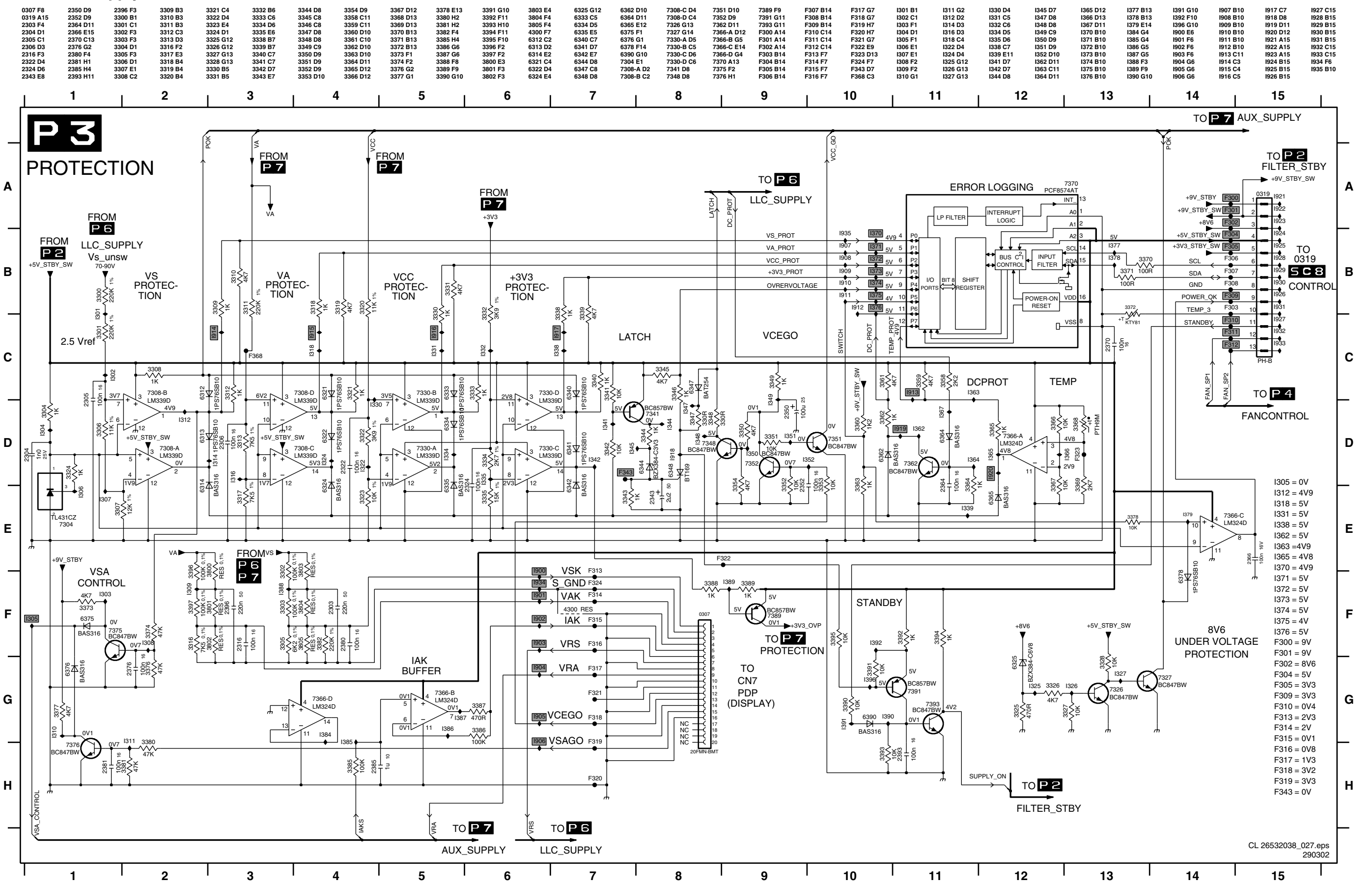
Layout LED/Switch Panel (Bottom View)



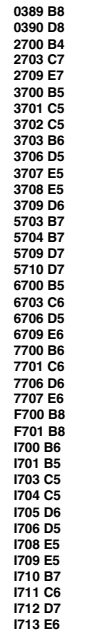
Power Supply Panel: Mains Filter and Standby Supply



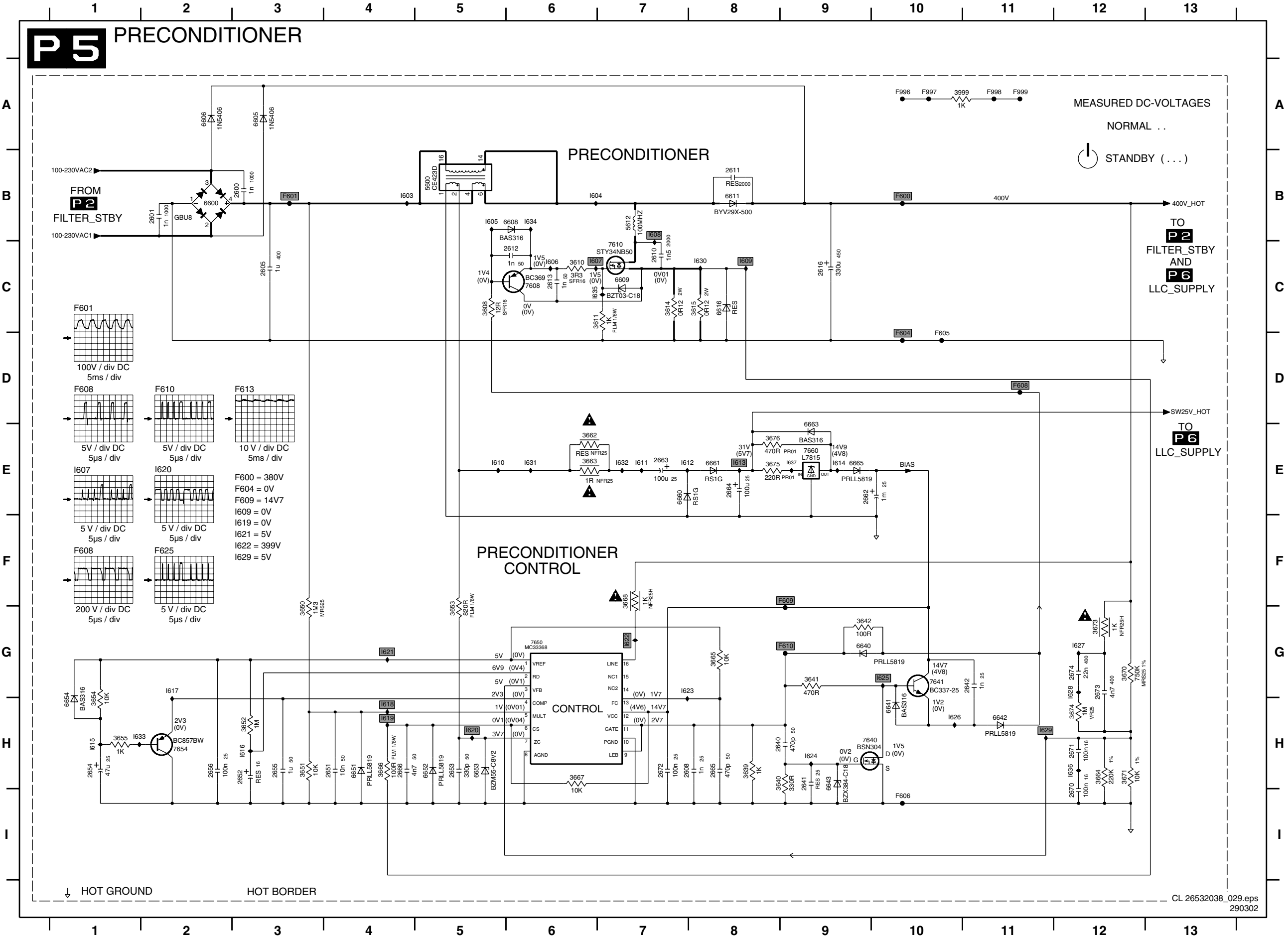
Power Supply Panel: Protections



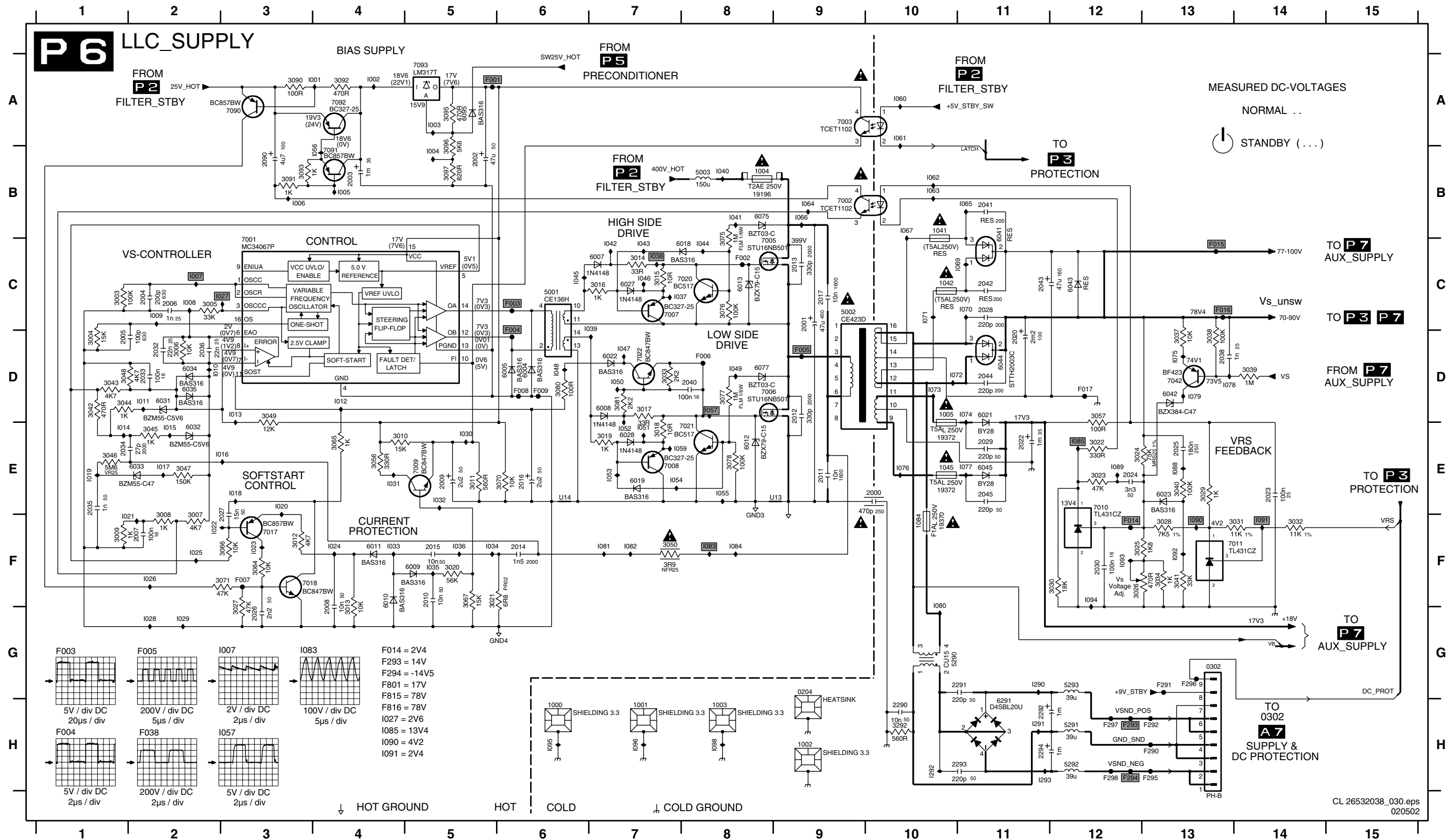
P 4 FANCONTROL



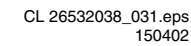
Power Supply Panel: Pre-Conditioner



- 2600 B3
- 2601 B2
- 2605 C3
- 2608 H8
- 2610 C7
- 2611 B8
- 2612 C6
- 2613 C6
- 2616 C9
- 2640 H9
- 2641 H9
- 2642 G11
- 2651 H4
- 2652 H3
- 2653 H5
- 2654 H1
- 2655 H3
- 2656 H2
- 2662 E9
- 2663 E7
- 2664 E8
- 2665 H8
- 2670 H2
- 2671 H2
- 2672 H7
- 2673 G12
- 2674 G12
- 3608 C5
- 3610 C6
- 3611 C7
- 3614 C7
- 3615 C8
- 3639 H8
- 3640 H9
- 3641 G9
- 3642 G9
- 3650 G3
- 3651 H3
- 3652 H3
- 3653 G5
- 3654 H1
- 3655 H1
- 3662 E6
- 3663 E6
- 3664 H12
- 3665 G8
- 3666 H4
- 3667 H6
- 3668 F7
- 3670 G12
- 3671 H12
- 3673 G12
- 3674 H12
- 3675 E8
- 3676 E8
- 3999 A10
- 5600 B5
- 5612 B7
- 6600 B2
- 6605 A3
- 6606 A2
- 6608 B6
- 6609 C7
- 6611 B8
- 6616 C8
- 6640 G9
- 6641 H10
- 6642 H11
- 6643 H9
- 6651 H4
- 6652 H5
- 6653 H5
- 6654 H1
- 6660 E7
- 6661 E8
- 6663 E9
- 6665 E9
- 7608 C6
- 7610 C7
- 7640 H9
- 7641 G10
- 7650 G6
- 7654 H2
- 7660 E9
- F600 B10
- F601 B3
- F604 D10
- F605 D10
- F606 I10
- F608 D11
- F609 F9
- F610 G9
- F996 A10
- F997 A10
- F998 A11
- F999 A11
- I603 B4
- I604 B6
- I605 B5
- I606 C6
- I607 C8
- I608 B7
- I609 C8
- I610 E5
- I611 E7
- I612 E7
- I613 E8
- I614 E9
- I615 H1
- I616 H3
- I617 G2
- I618 H4
- I619 H4
- I620 H5
- I621 G4
- I622 G7
- I623 G7
- I624 H9
- I625 H10
- I626 H10
- I627 G12
- I628 G12
- I629 H11
- I630 C8
- I631 E6
- I632 E7
- I633 H1
- I634 B6
- I635 C6
- I636 H12
- I637 E9

[illegible]

P 7 AUX_SUPPLY

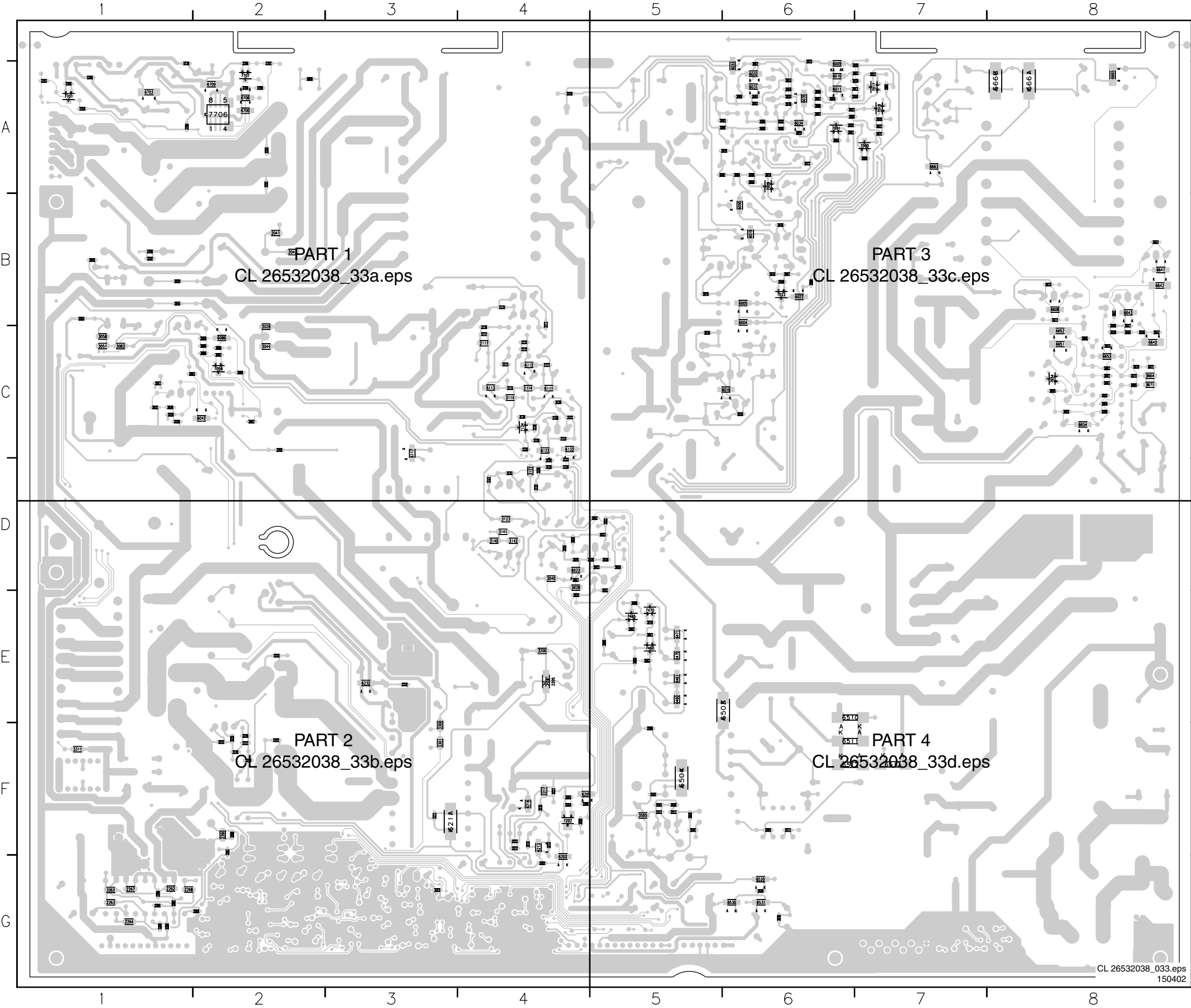


0305 A13	3226 H11	1113 E1
0323 E13	3228 F12	1114 E2
0333 D12	3240 G4	1115 D2
0342 G12	3241 H4	1116 D2
0352 G13	3260 B7	1117 D3
0392 H4	3261 B7	1118 C4
1110 B1	3262 A8	1120 D8
1200 G5	3263 H11	1121 D7
1260 A6	3265 A8	1122 E1
2021 I3	3268 B11	1123 D9
2050 G3	4268 B11	1124 D7
2054 C1	5120 C5	1125 D9
2055 F2	5200 G5	1126 D8
2058 H2	5220 G9	1127 D8
2059 I1	5224 G11	1128 D8
2060 I2	5228 H11	1129 E10
2111 D1	5260 A6	1131 E7
2112 D1	5268 B11	1132 E9
2113 E1	6050 G3	1133 C6
2114 E2	6054 E1	1152 C9
2117 D3	6055 E1	1153 D6
2118 C4	6061 I3	1154 D7
2121 D1	6086 I1	1155 D6
2122 D8	6111 D1	1156 D6
2123 D8	6112 D1	1157 E6
2126 E8	6113 D2	1158 C1
2133 E9	6117 C3	1159 E1
2138 D6	6120 D4	1160 E2
2203 I4	6123 D8	1161 G2
2205 I6	6133 B6	1200 G3
2210 I6	6142 G4	1201 H3
2211 I7	6202 I4	1202 I3
2212 H7	6205 I5	1203 I2
2217 I8	6210 F5	1204 I1
2218 H9	6211 I7	1207 I1
2219 H9	6213 I7	1208 H5
2222 H10	6216 H8	1209 H9
2223 G10	6224 G10	1210 G5
2224 G10	6225 H10	1211 G6
2225 H10	6230 I10	1212 G6
2226 H11	6232 I10	1213 H5
2227 G11	6260 B7	1214 H7
2228 H12	6268 H12	1215 H6
2230 I11	7050 G3	1216 H8
2231 I11	7052 I3	1217 H8
2232 I10	7058 I1	1218 H7
2260 B7	7059 I2	1219 I8
2261 A7	7110 C2	1220 H4
2262 A7	7111 C2	1221 I7
2263 B8	7112 C2	1222 I4
2264 B8	7113 C2	1224 I8
2265 A8	7120 C4	1225 I1
2266 B8	7121 D7	1230 F11
2267 B10	7130 E9	1231 F11
2268 A10	7134 E10	1232 G10
2269 B11	7140-A E5	1233 G10
2270 A9	7140-B D6	1234 F11
3051 G2	7142 D6	1235 G10
3053 H3	7200 G6	1236 H9
3054 B1	7202 H5	1237 H11
3055 G2	7217 H7	1238 H10
3062 H2	7217 H8	1240 I9
3083 H2	7220 F9	1241 I10
3084 I1	7227 H11	1242 I10
3085 I1	7230 I11	1259 A9
3086 I2	7260 A10	1260 A6
3087 I1	F102 C13	1261 A7
3088 I1	F106 F13	1262 A8
3110 C2	F110 C13	1263 A8
3111 C2	F110 A1	1264 B8
3112 D1	F111 C9	1265 B7
3113 D2	F113 G4	1266 B7
3114 D2	F114 I11	1267 A10
3115 D3	F115 A9	1268 B11
3116 D3	F116 I11	1269 B10
3117 D3	F118 E12	1270 B11
3118 D4	F119 E12	
3119 D4	F120 F12	
3120 D7	F121 D7	
3121 D7	F122 C12	
3122 D8	F123 E13	
3123 D8	F124 C12	
3124 D8	F125 E11	
3125 E8	F126 E11	
3126 E7	F127 E11	
3127 E7	F128 E11	
3128 E8	F129 F12	
3129 C1	F130 D12	
3130 D8	F131 D12	
3131 D9	F132 F13	
3132 E8	F133 F12	
3133 C8	F134 F12	
3134 D10	F135 E12	
3135 E10	F136 G12	
3136 E10	F137 H13	
3138 D5	F138 F12	
3139 D6	F139 H13	
3140 E6	F140 G12	
3141 E6	F240 H4	
3142 E6	F241 H4	
3146 C6	F260 A6	
3147 D9	F261 B12	
3200 G5	F262 B12	
3201 G6	F263 B13	
3202 H5	F264 B13	
3203 I4	I101 B2	
3204 I5	I102 C2	
3205 I5	I103 C3	
3212 H6	I104 C2	
3213 I7	I105 C1	
3214 I7	I106 C3	
3216 H8	I107 D4	
3217 I8	I108 E5	
3218 I9	I109 D2	
3219 I9	I110 D3	
3224 G11	I111 D4	
3225 H11	I112 D3	

CL 26532038_032.eps
150402

0201	B5	2402	F1	3345	F7	5292	A9	7140	D7
0203	D4	2403	F2	3346	F7	5293	A9	7142	D6
0204	D7	2404	F3	3347	F7	5401	F2	7200	E6
0302	A9	2405	E1	3348	F7	5402	E2	7212	F6
0305	F9	2406	E3	3349	F7	5500	F5	7217	F6
0306	F5	2407	E1	3350	F7	5505	F5	7220	F8
0307	F3	2405	E5	3351	F7	5600	B2	7227	F8
0308	F2	2503	E4	3352	F7	5612	C3	7230	E8
0319	F5	2505	C4	3353	F7	5703	A9	7260	F9
0323	E9	2508	F5	3354	F7	5707	A8	7304	F8
0333	E9	2510	E5	3358	F6	6009	C4	7308	F8
0342	F9	2530	F4	3359	F7	6008	B4	7326	F5
0352	F9	2532	F5	3360	F6	6012	A5	7327	F5
0389	A9	2533	F4	3361	F6	6013	C5	7330	F8
0390	A9	2540	F5	3362	F6	6021	B9	7341	F7
0392	C8	2541	F5	3363	F6	6027	C4	7348	F7
1004	C5	2600	E3	3364	F6	6028	B4	7351	F7
1005	B8	2601	D3	3365	F7	6041	B8	7352	F7
1041	A7	2605	D2	3366	F7	6043	C7	7362	F6
1042	A7	2610	C2	3367	F7	6044	C8	7366	F7
1045	B8	2611	C2	3368	F8	6045	B9	7370	F6
1084	B8	2616	D4	3369	F7	6050	D8	7375	F7
1110	B6	2652	C2	3370	F6	6054	B9	7376	F7
1200	E7	2654	C2	3371	F6	6055	B9	7389	F8
1260	F9	2655	C2	3372	F5	6061	C8	7391	F6
1400	F1	2662	A2	3373	F7	6075	C5	7393	F6
1401	E8	2663	A3	3374	F7	6077	A5	7500	F4
1402	F1	2664	A2	3376	F7	6120	C8	7501	F4
1450	E5	2673	D1	3377	F7	6142	D9	7502	F5
1460	E5	2674	C1	3378	F6	6206	F7	7530	F4
2000	A6	2700	A9	3380	F7	6224	E8	7531	F4
2001	B5	2703	A9	3381	F7	6225	F8	7540	F5
2002	A4	2709	A8	3382	F7	6230	E7	7608	B2
2003	A4	3014	C4	3385	F7	6260	F8	7610	B3
2004	A4	3015	C4	3386	F7	6267	F9	7640	B1
2005	A4	3017	B4	3387	F7	6291	A8	7641	B1
2009	A4	3018	B4	3388	F8	6312	F7	7650	C2
2011	B5	3021	A5	3389	F8	6313	F7	7660	A3
2012	A5	3024	E8	3390	F6	6314	F7	7700	A8
2013	C5	3026	D6	3391	F6	6321	F7		
2014	A5	3046	A6	3392	F6	6322	F8		
2016	A4	3050	B5	3393	F6	6324	F7		
2017	B5	3053	C9	3394	F6	6325	F5		
2020	C9	3054	B9	3395	F6	6333	F8		
2021	D9	3075	C4	3396	F9	6334	F8		
2022	B9	3077	A5	3397	F8	6335	F8		
2025	E8	3118	C7	3400	F2	6340	F8		
2034	A6	3119	C7	3401	F2	6341	F8		
2043	B7	3127	D6	3402	F3	6342	F8		
2050	D8	3129	B6	3403	F3	6344	F7		
2058	B9	3138	D7	3404	F1	6347	F7		
2090	A4	3139	D7	3450	E4	6348	F7		
2113	C6	3146	E7	3451	E4	6362	F6		
2118	C6	3201	E6	3452	D2	6364	F6		
2121	D6	3218	F5	3506	E4	6365	F7		
2122	D6	3219	F6	3507	F4	6375	F7		
2133	D6	3302	F9	3508	D4	6376	F7		
2138	E6	3303	F8	3608	B2	6378	F7		
2210	F6	3304	F8	3610	B2	6390	F6		
2218	F6	3305	F8	3611	B3	6501	F4		
2219	E6	3306	F8	3614	C2	6502	F4		
2224	E8	3307	F8	3615	C2	6505	F5		
2225	F8	3308	F7	3650	C2	6600	E3		
2228	E9	3309	F7	3653	B2	6605	D4		
2230	E7	3310	F8	3662	A3	6606	E4		
2231	E7	3312	F8	3663	A3	6609	B3		
2261	F9	3313	F8	3666	C2	6611	C3		
2269	F9	3316	F8	3668	C1	6616	C3		
2270	F9	3317	F8	3670	D1	7001	A4		
2292	A8	3318	F7	3673	C1	7002	D5		
2294	A9	3319	F7	3674	C1	7003	D5		
2303	F8	3320	F8	3675	A3	7005	C5		
2304	F8	3321	F7	3676	A3	7006	A5		
2305	F8	3322	F8	3800	F9	7007	C4		
2306	F8	3323	F8	3801	F8	7008	B4		
2316	F7	3324	F8	3802	F8	7010	D5		
2322	F8	3325	F5	3803	F9	7011	D5		
2324	F8	3326	F5	3804	F8	7020	C4		
2343	F7	3327	F5	3805	F8	7021	B4		
2350	F7	3328	F5	4300	F2	7042	C9		
2352	F7	3330	F8	5001	B4	7050	C8		
2364	F6	3331	F8	5002	B6	7052	C8		
2366	F7	3332	F8	5003	D5	7059	B8		
2370	F6	3333	F8	5120	D7	7092	B4		
2376	F7	3334	F8	5200	E6	7093	B4		
2380	F7	3335	F8	5220	F7	7110	B6		
2381	F7	3338	F8	5224	E9	7111	B6		
2385	F7	3339	F8	5225	E9	7112	C6		
2393	F6	3340	F8	5260	F8	7117	C6		
2396	F8	3341	F7	5268	F9	7120	C6		
2400	F2	3342	F7	5290	B9	7121	C6		
2401	F3	3344	F7	5291	A9	7130	D6		

Layout Power Supply Panel (Overview Bottom View)

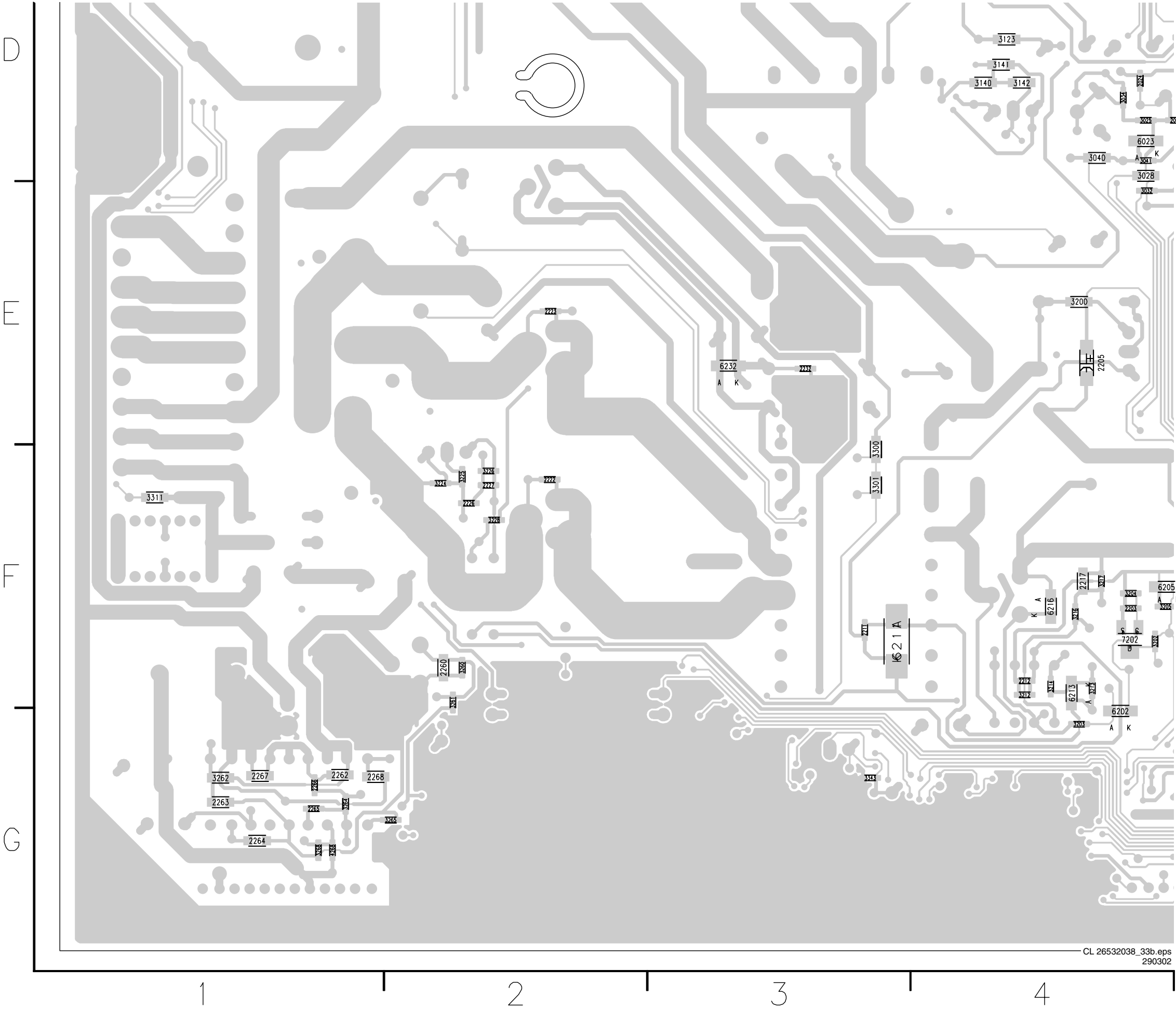


2006	A6	3029	D5	3264	G1	6643	B8
2007	A6	3030	D5	3265	G2	6651	C8
2008	A7	3031	E5	3268	G1	6652	C8
2010	A7	3032	E4	3292	B1	6653	C8
2015	A6	3033	B6	3300	F3	6654	C8
2023	D5	3034	D4	3301	F3	6660	A8
2024	D4	3037	C1	3311	F1	6661	A8
2026	A7	3038	C1	3343	G3	6663	A7
2027	A6	3039	C1	3460	E5	6665	A8
2028	C2	3040	D4	3461	E5	6700	A2
2029	B1	3041	D4	3463	E5	6703	A1
2030	D5	3042	A6	3465	E5	6706	A2
2032	A6	3043	A6	3467	E5	6709	A2
2033	A6	3044	A6	3469	E5	7009	A6
2035	A4	3045	A6	3470	E5	7017	A7
2036	A6	3047	A6	3501	F5	7018	A7
2038	C1	3048	A6	3502	F5	7022	B6
2040	B6	3049	A6	3503	F5	7058	C2
2041	B2	3051	C1	3504	F5	7090	A7
2042	B2	3056	A6	3505	F5	7091	A6
2044	C2	3057	D5	3520	G6	7134	C4
2045	B1	3058	C1	3530	G6	7202	F4
2054	B1	3062	C1	3639	C8	7460	E5
2055	B1	3064	A7	3640	C8	7465	E5
2059	C2	3065	A6	3641	B8	7470	E5
2061	C2	3066	A6	3642	C8	7654	C8
2111	C4	3067	A7	3651	C8	7701	A1
2112	C4	3070	A6	3652	C8	7706	A2
2114	C4	3071	A7	3654	C8	7707	A2
2117	C4	3076	C6	3655	C8		
2123	C4	3078	B6	3664	C8		
2126	C4	3080	B6	3665	C8		
2203	F4	3081	B6	3667	C8		
2205	E4	3083	C1	3671	C8		
2211	F3	3084	C2	3700	A1		
2212	F4	3085	C2	3701	A1		
2217	F4	3086	C2	3702	A1		
2222	F2	3087	C2	3703	A1		
2223	E2	3088	C2	3706	A2		
2226	F2	3090	A7	3707	A2		
2227	F2	3091	A6	3708	A2		
2232	E3	3092	A6	3709	A2		
2260	F2	3093	A6	3999	A2		
2262	G1	3095	A6	4268	G1		
2263	G1	3096	A6	5704	A1		
2264	G1	3097	A6	5710	A1		
2265	G1	3110	B4	6004	B6		
2266	G1	3111	B4	6005	B6		
2267	G1	3112	C4	6009	A6		
2268	G1	3113	C4	6010	A6		
2290	B1	3114	C4	6011	A6		
2291	A2	3115	C4	6018	C6		
2293	A2	3116	C4	6019	B6		
2504	F6	3117	C4	6022	B6		
2507	F5	3120	C4	6023	D4		
2509	F5	3121	C4	6031	A6		
2511	F5	3122	D4	6032	A6		
2512	F5	3123	D4	6033	A6		
2513	F6	3124	D4	6034	A6		
2608	C8	3125	D4	6035	A6		
2612	B8	3126	D4	6042	C2		
2613	B8	3128	C4	6086	C2		
2640	C8	3130	D4	6095	B6		
2641	C8	3131	D4	6111	C4		
2642	B8	3132	D4	6112	C4		
2651	C8	3133	D4	6113	C4		
2653	C8	3134	C4	6117	C3		
2656	C8	3135	C4	6123	C4		
2665	C8	3136	C4	6133	C4		
2666	C8	3140	D4	6202	G4		
2670	C8	3141	D4	6205	F4		
2671	C8	3142	D4	6211	F3		
2672	C8	3147	D4	6213	F4		
3003	A6	3200	E4	6216	F4		
3004	A6	3202	F4	6232	E3		
3005	A6	3203	G4	6460	E5		
3006	A6	3204	F4	6461	E5		
3007	A6	3205	F4	6470	E5		
3008	A6	3212	F4	6471	E5		
3009	A6	3213	F4	6503	E6		
3010	A6	3214	F4	6504	F5		
3011	A6	3216	F4	6510	E6		
3012	A7	3217	F4	6511	F6		
3013	A7	3224	F2	6512	F6		
3016	C5	3225	F2	6513	F7		
3019	B5	3226	F2	6520	G6		
3020	A7	3228	F2	6530	G6		
3022	D5	3240	C2	6531	G6		
3023	D5	3241	C1	6608	B8		
3025	D4	3260	F2	6640	C8		
3027	A7	3261	F2	6641	B8		
3028	D4	3262	G1	6642	B8		

4



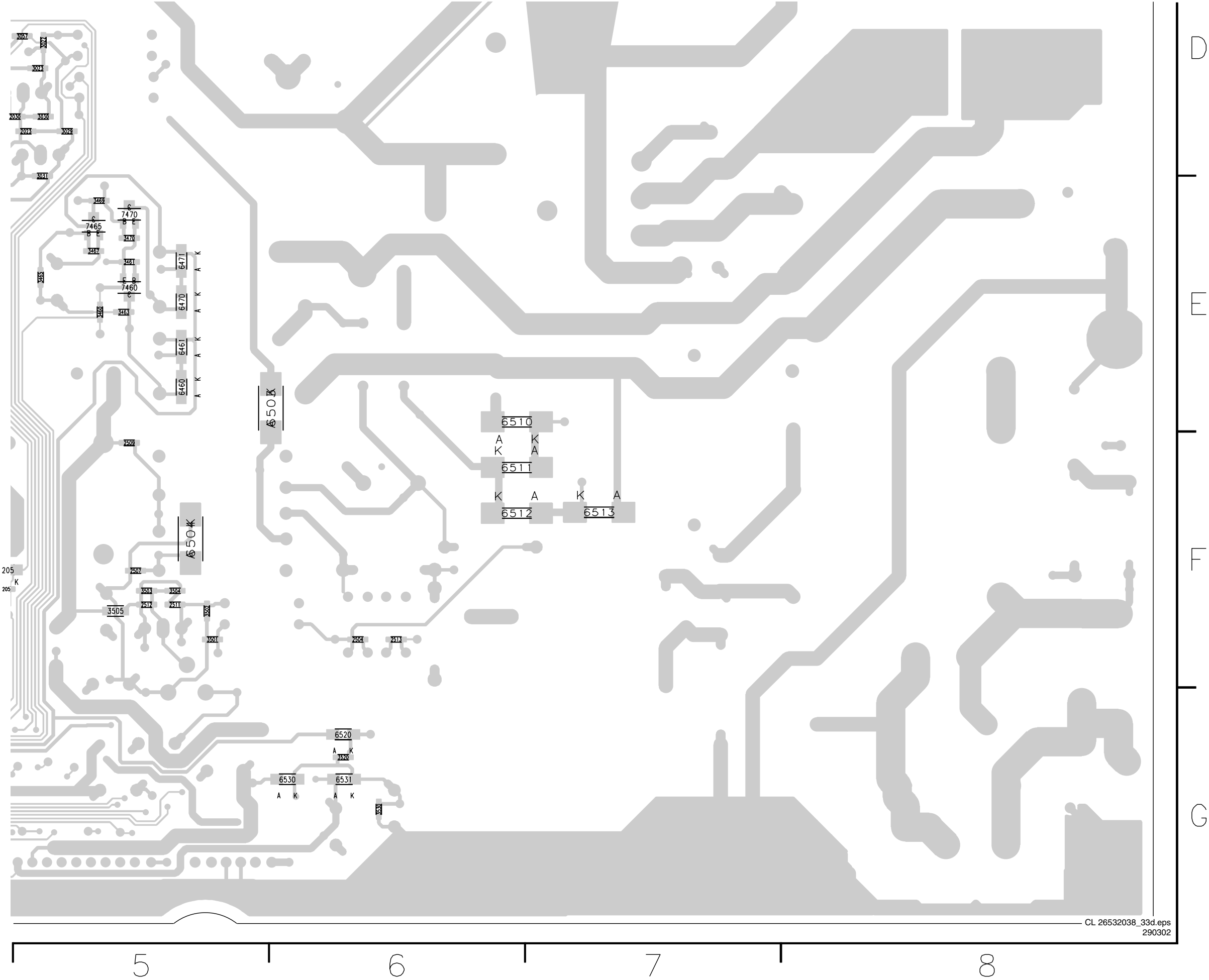
Layout Power Supply Panel (Part 2 Bottom View)



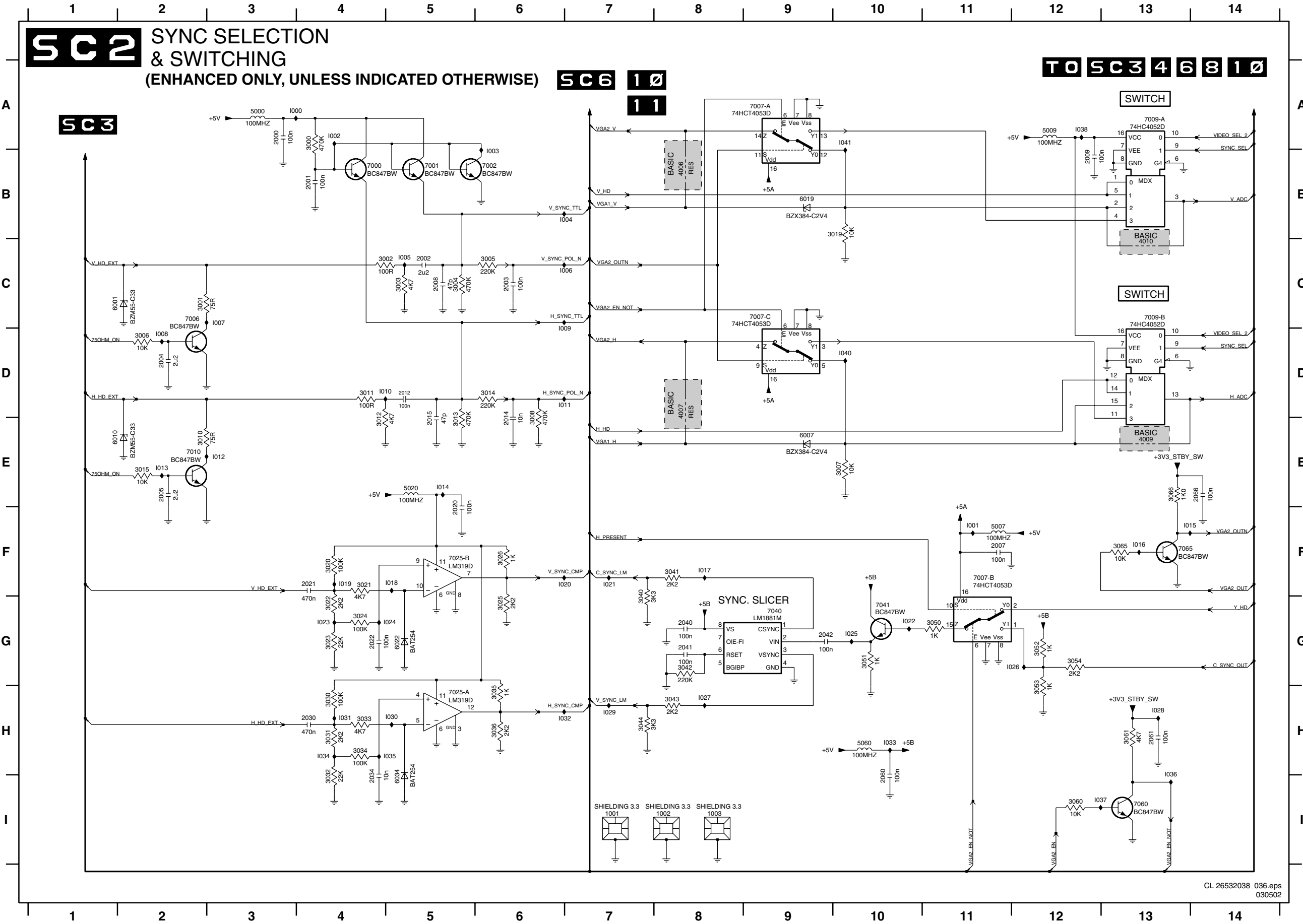
8



Layout Power Supply Panel (Part 4 Bottom View)

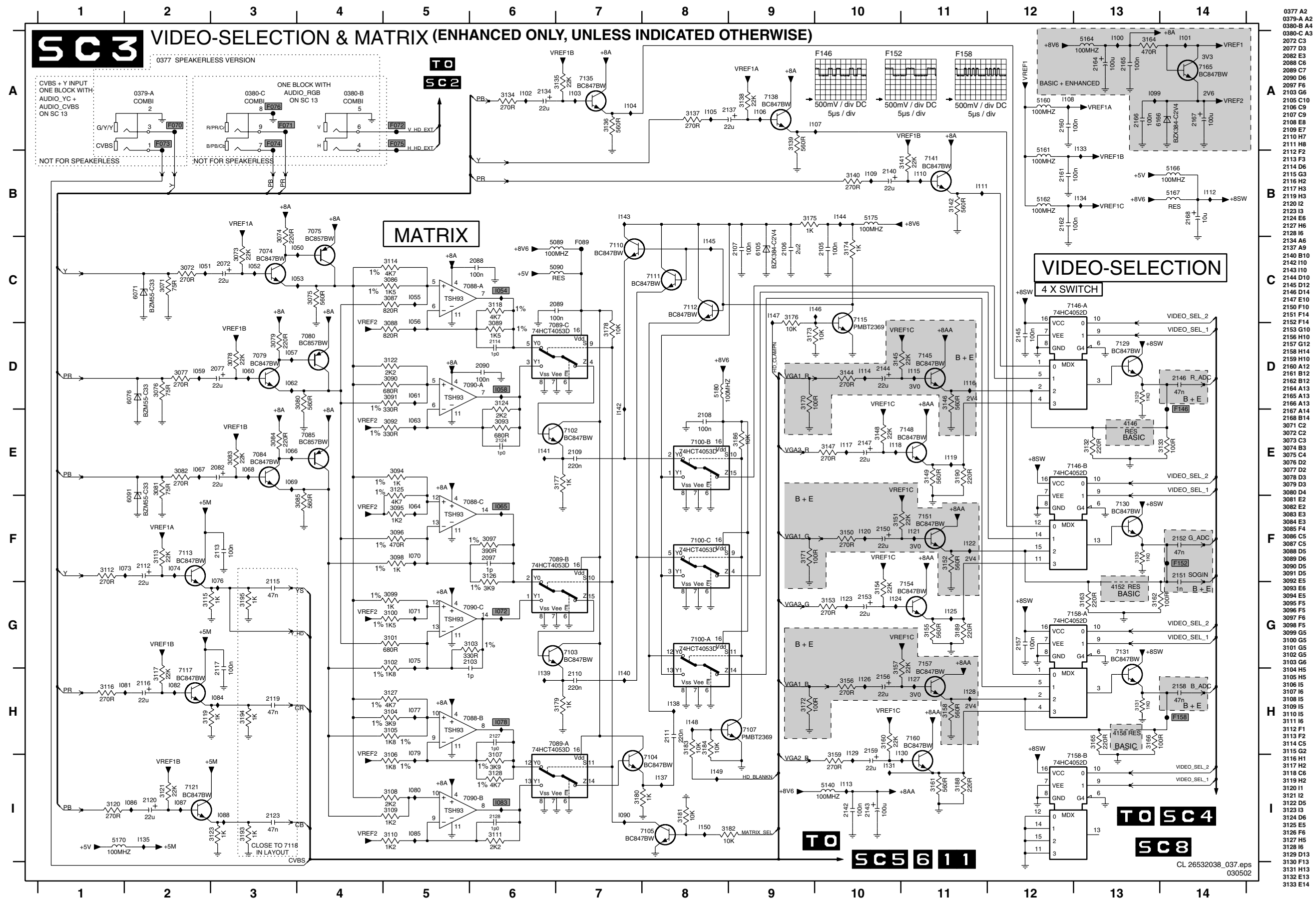


SCAVIO Panel: Sync Selection Source Selection



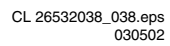
- 1001 I7
- 1002 I8
- 1003 I8
- 2000 A3
- 2001 B4
- 2002 C5
- 2003 C6
- 2004 D2
- 2005 E2
- 2007 F11
- 2008 C5
- 2009 B12
- 2012 D5
- 2014 E6
- 2015 E5
- 2020 F5
- 2021 F4
- 2022 G4
- 2030 H4
- 2034 I4
- 2040 G8
- 2041 G8
- 2042 G9
- 2060 I10
- 2061 H13
- 2066 E14
- 3000 A4
- 3001 C2
- 3002 C5
- 3003 C5
- 3004 C5
- 3005 C6
- 3006 D2
- 3007 E10
- 3008 E6
- 3010 E2
- 3011 D4
- 3012 E4
- 3013 E5
- 3014 D6
- 3015 E2
- 3019 B10
- 3020 F4
- 3021 F4
- 3022 G4
- 3023 G4
- 3024 G4
- 3025 G6
- 3026 F6
- 3030 H4
- 3031 H4
- 3032 I4
- 3033 H4
- 3034 H4
- 3035 H6
- 3036 H6
- 3040 G7
- 3041 F8
- 3042 G8
- 3043 H8
- 3044 H7
- 3050 G11
- 3051 G10
- 3052 G12
- 3053 H12
- 3054 G12
- 3060 I12
- 3061 H13
- 3065 F13
- 3066 E13
- 4006 B8
- 4007 D8
- 4009 E13
- 4010 C13
- 5000 A3
- 5007 F11
- 5009 A12
- 5020 E5
- 5060 H10
- 6001 C1
- 6007 E9
- 6010 E1
- 6019 B9
- 6022 G5
- 6034 I5
- 7000 B4
- 7001 B5
- 7002 B6
- 7006 C2
- 7007-A A9
- 7007-B F11
- 7007-C C9
- 7009-A A13
- 7009-B C13
- 7010 E2
- 7025-A H5
- 7025-B F5
- 7040 G9
- 7041 G10
- 7060 I13
- 7065 F13
- 1000 A3
- 1001 F11
- 1002 A4
- 1003 B6
- 1004 B7
- 1005 C5
- 1006 C7
- 1007 C3
- 1008 D2
- 1009 D7
- 1010 D4
- 1011 D7
- 1012 E3
- 1013 E2
- 1014 E5
- 1015 F13
- 1016 F13
- 1017 F8
- 1018 F5
- 1019 F4
- 1020 F7
- 1021 F7
- 1022 G10
- 1023 G4
- 1024 G5
- 1025 G10
- 1026 G12
- 1027 H8
- 1028 H13
- 1029 H7
- 1030 H5
- 1031 H4
- 1032 H7
- 1033 H10
- 1034 H4
- 1035 H5
- 1036 H13
- 1037 I12
- 1038 A12
- 1040 G10
- 1041 A10

SCAVIO Panel: Video Selection & Matrix



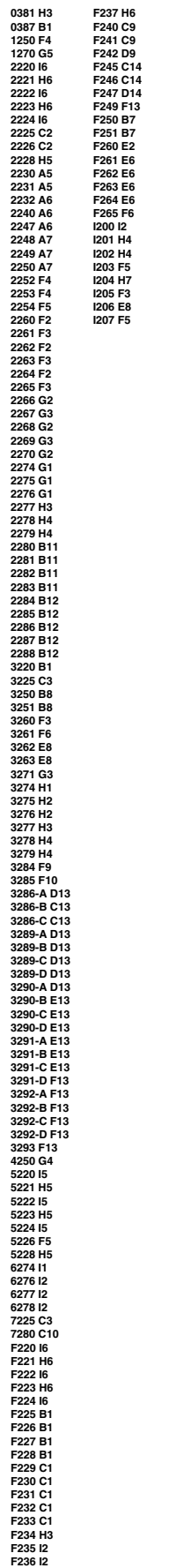
0377 A2	3134 A6	7158-B H13
0379-A A2	3135 A7	7160 H11
0380-B A4	3136 A7	7165 A14
0380-C A3	3137 A8	F070 A2
2072 C3	3138 A9	F071 A3
2077 D3	3139 A9	F072 A5
2082 E3	3140 B10	F073 A2
2088 C6	3141 B11	F074 A3
2089 C7	3142 B11	F075 A5
2090 D6	3144 D10	F076 A3
2097 F6	3145 D10	F089 C7
2103 G6	3146 D11	F146 E14
2105 C10	3147 E10	F152 F14
2106 C9	3148 E10	F158 H14
2107 C9	3149 E11	I051 C2
2108 E8	3150 F10	I052 C3
2109 E7	3151 F10	I053 C4
2110 H7	3152 F11	I054 C6
2111 H8	3153 G10	I055 C5
2112 F2	3154 G10	I056 C5
2113 F3	3155 G11	I057 D3
2114 D6	3156 H10	I058 D6
2115 G3	3157 H2	I059 D2
2116 H2	3158 H11	I060 D3
2117 H3	3159 H10	I061 D5
2119 H3	3160 H10	I062 D3
2120 I2	3161 I11	I063 E5
2123 I3	3162 G13	I064 F5
2124 E6	3163 G13	I065 F6
2127 H6	3164 H10	I066 E3
2128 I6	3165 H13	I067 E2
2134 A6	3166 H13	I068 D3
2137 A9	3170 D9	I069 E3
2140 B10	3171 F9	I070 F5
2142 I10	3172 H9	I071 G5
2143 I10	3173 D9	I072 G6
2144 D10	3174 C10	I073 F2
2145 D12	3175 B9	I074 F2
2146 D14	3176 C9	I075 G5
2147 E10	3177 E7	I076 F3
2150 F10	3178 D7	I077 H5
2151 F14	3179 H7	I078 H6
2152 F14	3180 I7	I079 H5
2153 G10	3181 I8	I080 I5
2156 H10	3182 I9	I081 H2
2157 G12	3183 H8	I082 H2
2158 H14	3184 H8	I083 I6
2159 H10	3185 E9	I084 H3
2160 A12	3186 E9	I085 I5
2161 B12	3188 I11	I086 I2
2162 B12	3189 G11	I087 I2
2164 A13	3190 E11	I088 I3
2165 A13	3191 I3	I089 I7
2166 A13	3194 H3	I090 A13
2167 A14	3195 G3	I100 A13
2168 B14	4146 E13	I101 A14
3071 C2	4152 F13	I102 A6
3072 C2	4158 H13	I103 A7
3073 C3	5089 C7	I104 A7
3074 B3	5090 C7	I105 A8
3075 C4	5140 I10	I106 A9
3076 D2	5140 I10	I107 A10
3077 D2	5141 B12	I108 A12
3078 D3	5162 B12	I109 B10
3079 D3	5164 A13	I110 B11
3080 D4	5166 B14	I111 B11
3081 E2	5167 B14	I112 B14
3082 E2	5170 I1	I113 I10
3083 E3	5175 B10	I114 D10
3084 E3	5180 D8	I115 D11
3085 F4	5180 D8	I116 D11
3086 C5	5180 D8	I117 E10
3087 C5	5180 D8	I118 E10
3088 D5	5180 D8	I119 E11
3089 D5	5180 D8	I120 F10
3090 D5	5180 D8	I121 F11
3091 D5	5180 D8	I122 F11
3092 E5	5180 D8	I123 F11
3093 E6	5180 D8	I124 F11
3094 E5	5180 D8	I125 F11
3095 F5	5180 D8	I126 F11
3096 F5	5180 D8	I127 H11
3097 F6	5180 D8	I128 H11
3098 F5	5180 D8	I129 H10
3099 G5	5180 D8	I130 H11
3100 G5	5180 D8	I131 I10
3101 G5	5180 D8	I132 I10
3102 G5	5180 D8	I133 A13
3103 G6	5180 D8	I134 B13
3104 H5	5180 D8	I135 I2
3105 H5	5180 D8	I136 I2
3106 I5	5180 D8	I137 I8
3107 I6	5180 D8	I138 H8
3108 I5	5180 D8	I139 H8
3109 I5	5180 D8	I140 H7
3110 I5	5180 D8	I141 E6
3111 I6	5180 D8	I142 E7
3112 F1	5180 D8	I143 B7
3113 F2	5180 D8	I144 B10
3114 C5	5180 D8	I145 C8
3115 G2	5180 D8	I146 C10
3116 H1	5180 D8	I147 C9
3117 H2	5180 D8	I148 H8
3118 C6	5180 D8	I149 I8
3119 H2	5180 D8	I150 I8
3120 I1	5180 D8	
3121 I2	5180 D8	
3122 D5	5180 D8	
3123 I3	5180 D8	
3124 D6	5180 D8	
3125 E5	5180 D8	
3126 F6	5180 D8	
3127 H5	5180 D8	
3128 I6	5180 D8	
3129 D13	5180 D8	
3130 F13	5180 D8	
3131 H13	5180 D8	
3132 E13	5180 D8	
3133 E14	5180 D8	

SC4 VIDEO-SELECTION -ADC (BASIC & ENHANCED VERSION)

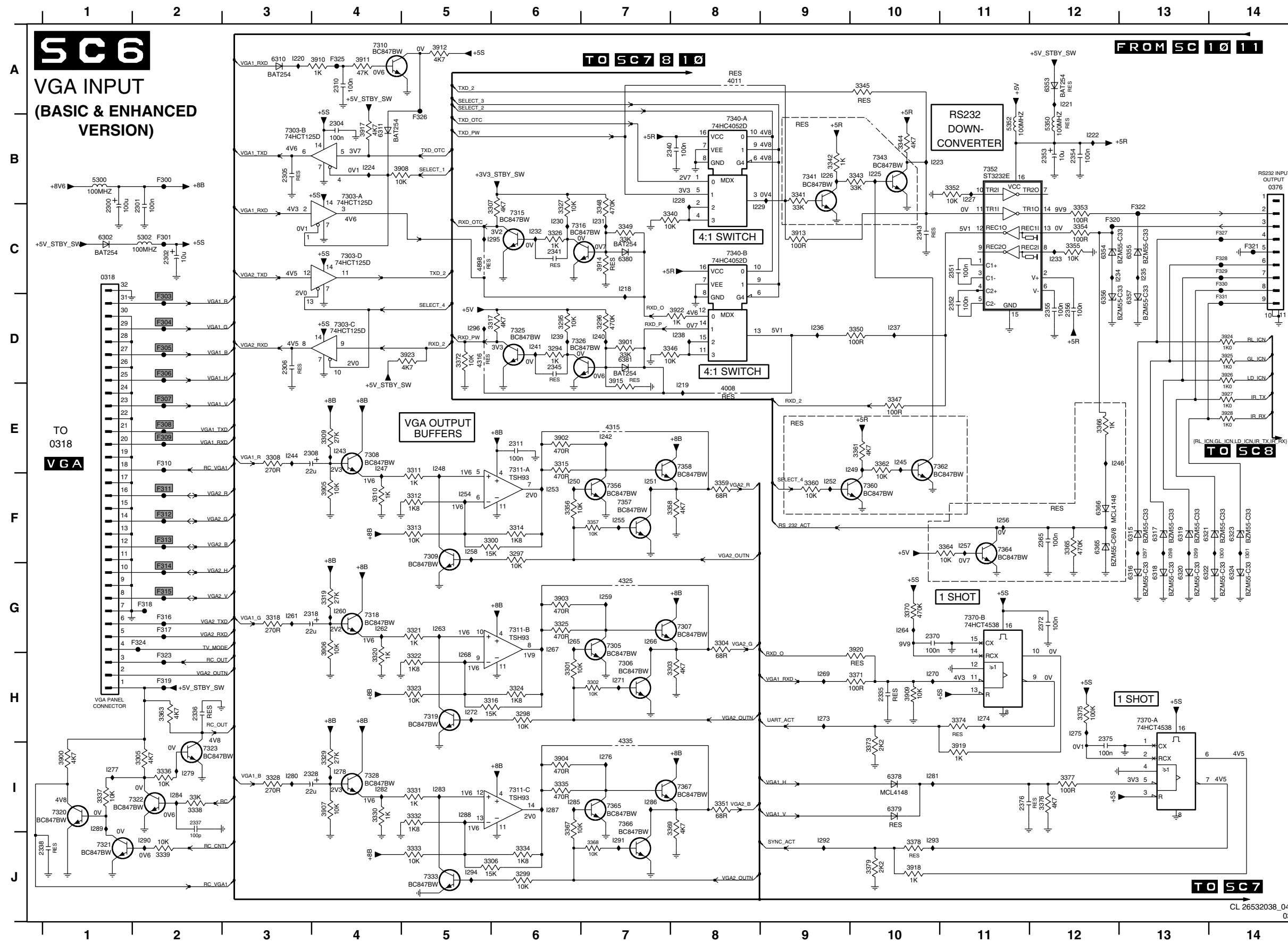


1375 F14	I160 H10
1170 G2	I161 H11
1171 H1	I165 H13
2170 B1	I166 H14
2171 B1	
2172 B1	
2173 B1	
2174 C1	
2175 C1	
2176 C1	
2177 C1	
2178 D1	
2179 D1	
2180 D1	
2181 D1	
2182 D1	
2183 D1	
2184 E1	
2185 E1	
2186 E1	
2187 E1	
2188 F1	
2189 F1	
2190 F1	
2191 F1	
2192 F1	
2193 F1	
2195 I2	
2196 G2	
2197 I2	
2198 H2	
2199 H2	
2205 G4	
2206 G5	
2207 G6	
2208 H7	
2209 H7	
2210 H7	
2211 H7	
2212 G11	
2217 H11	
3200 A10	
3203 A9	
3204 A9	
3205 A10	
3206 G7	
3207 G7	
3208 H7	
3209 H8	
3210 H8	
3211 G10	
3212 G10	
3213 I9	
3214 I9	
3215 I9	
3216 I9	
3217 I11	
3218 I11	
3219 A11	
4200 A12	
4201 A10	
4202 A12	
4203 A11	
4215 I11	
4216 I11	
5196 G2	
5197 I1	
5198 H2	
5199 H2	
5210 H13	
5214 H10	
6200 C12	
6201 D12	
6202 D12	
6203 E12	
6204 C13	
6205 D13	
6206 D13	
6207 E13	
6208 H13	
6209 I13	
6210 H13	
6214 H10	
7170 B2	
7175 I2	
7215 I10	
F162 I2	
F170 F12	
F171 F12	
F172 G12	
F173 G12	
F174 G12	
F175 G12	
F176 H12	
F177 H12	
F178 H14	
F180 I12	
F181 I12	
F196 G2	
F197 I1	
F198 H2	
F199 H2	
F201 B10	
F202 G3	
F203 G3	
F210 H6	
F211 H7	
F216 I10	
I151 G11	
I152 G8	
I153 G7	
I154 G10	
I155 G5	
I156 G6	
I157 G6	
I158 H7	
I159 H8	

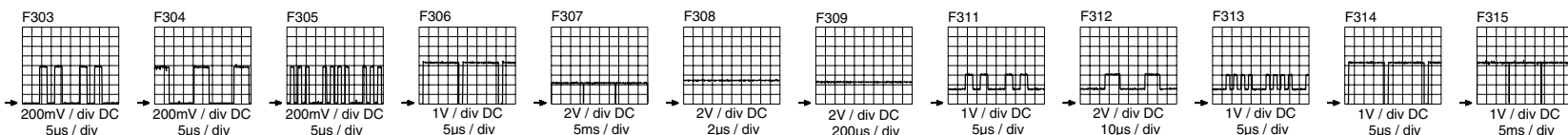
VIDEO-SELECTION-DECODER (ENHANCED VERSION ONLY)



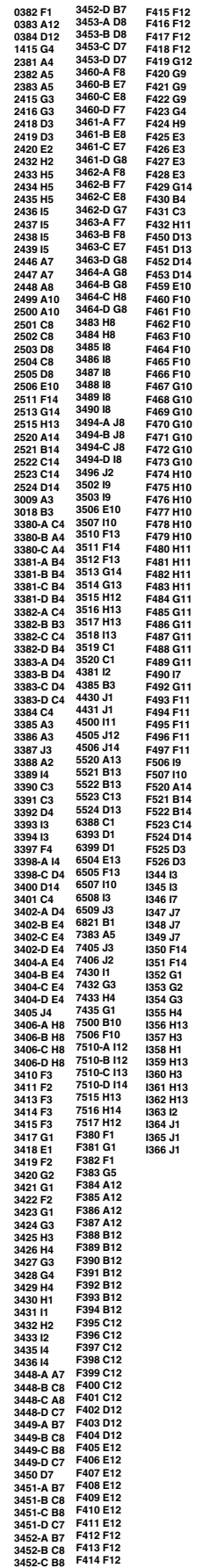
SCAVIO Panel: VGA Input



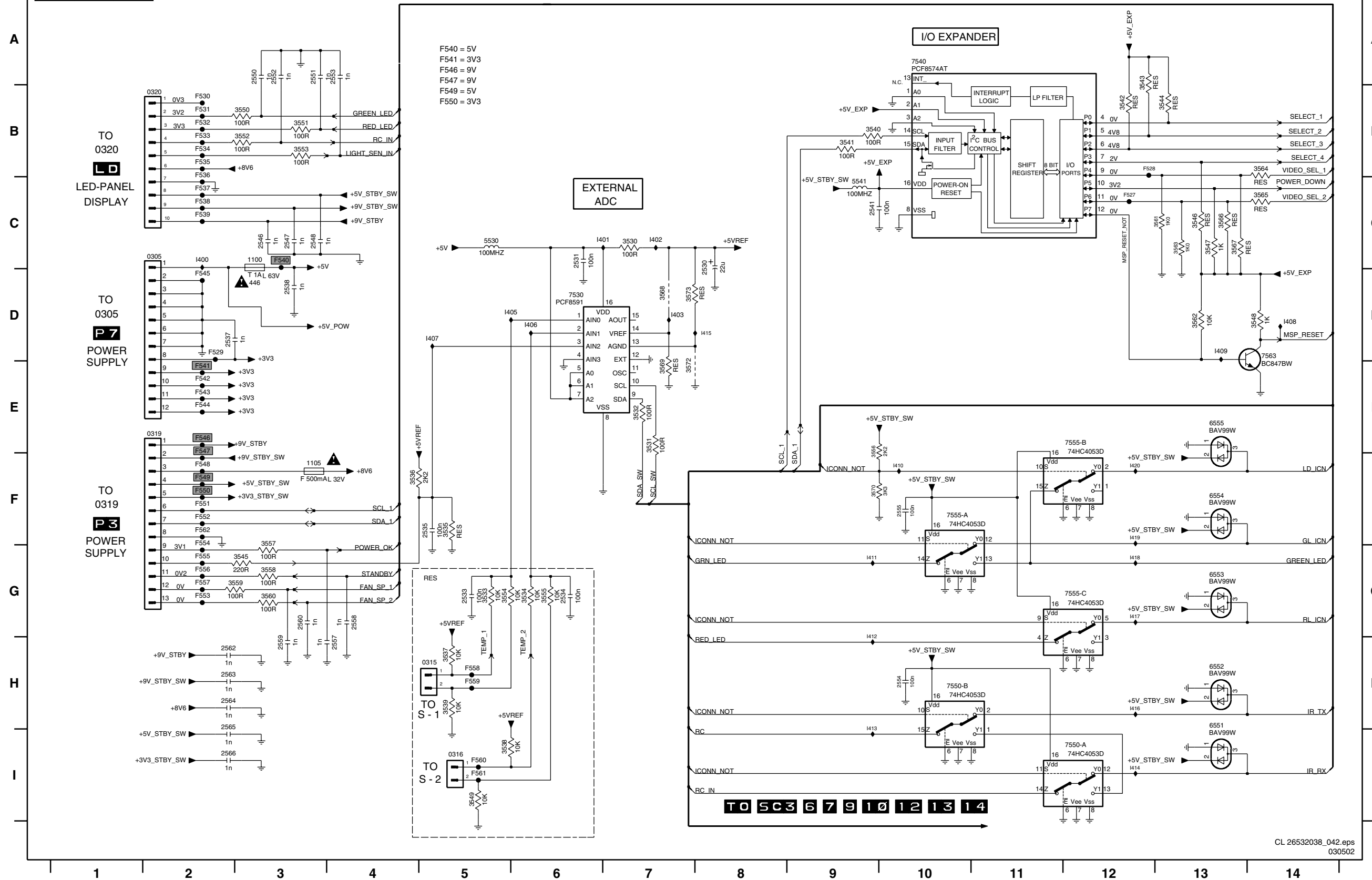
0318 C1	3901 D7	F318 G2
0376 B14	3902 E6	F319 H2
2300 B1	3903 G6	F320 C12
2301 B2	3904 I6	F321 C14
2302 B2	3905 F4	F322 C13
2304 B4	3906 G4	F323 H2
2305 B3	3907 I4	F324 G2
2306 D3	3908 B4	F325 A4
2308 E3	3909 H10	F326 B5
2310 A4	3910 A4	F327 C14
2311 E6	3911 A4	F328 C14
2318 G3	3912 A5	F329 C14
2328 I3	3913 C9	F330 C14
2335 H10	3914 C7	F331 D14
2336 H2	3915 D7	I218 C7
2337 I2	3917 B4	I219 E8
2338 J1	3918 J10	I220 A3
2340 B8	3919 I11	I221 A12
2341 C6	3920 G10	I222 B12
2343 C10	3922 D8	I223 B10
2345 D6	3923 D5	I224 B4
2351 C11	3924 D14	I225 B10
2352 D11	3925 D14	I226 B9
2353 B12	3926 D14	I227 B11
2354 B12	3927 E14	I228 B8
2355 D12	3928 E14	I229 C8
2356 D12	4008 E8	I230 C6
2365 F12	4011 A8	I231 C7
2370 G10	4315 E7	I232 C6
2372 G12	4318 D5	I233 C12
2375 H12	4325 G7	I234 C12
2376 I11	4335 I7	I235 C13
2394 D6	4898 C5	I236 D9
2395 D6	5300 B1	I237 D9
2396 D7	5302 B2	I238 D9
2397 F6	5350 B12	I239 D6
2398 H6	5352 B11	I240 D7
2399 J6	6302 B1	I241 D6
3300 F5	6310 A3	I242 E7
3301 H6	6311 B4	I243 E4
3302 H7	6315 F13	I244 E3
3303 H8	6316 G13	I245 E10
3304 G8	6317 F13	I246 E12
3305 I2	6318 G13	I247 E4
3306 J5	6319 F13	I248 E5
3307 C6	6320 G13	I249 E10
3308 E3	6321 F13	I250 F6
3309 E4	6322 G13	I251 F7
3310 F4	6323 F14	I252 F9
3311 E5	6324 G14	I253 F6
3312 F5	6353 A12	I254 F5
3313 F5	6354 C12	I255 F7
3314 F6	6355 C13	I256 F11
3315 E6	6356 D12	I257 F11
3316 H6	6357 D13	I258 F5
3317 D6	6365 F12	I259 G7
3318 G3	6366 F12	I260 G4
3319 G4	6378 I10	I261 G3
3320 H4	6379 I10	I262 G4
3321 G5	6380 C7	I263 G5
3322 H5	6381 D7	I264 G10
3323 H5	7303-A B4	I265 G6
3324 H6	7303-B B3	I266 G7
3325 G6	7303-C B3	I267 G6
3326 C6	7303-D C4	I268 H5
3327 C6	7305 G7	I269 H9
3328 I3	7306 H7	I270 H10
3329 I4	7307 G8	I271 H7
3330 I4	7308 E4	I272 H5
3331 I5	7309 F5	I273 H9
3332 I5	7310 A4	I274 H11
3333 J5	7311-A E6	I275 H12
3334 J6	7311-B G6	I276 I7
3335 I6	7311-C I6	I277 I11
3336 I2	7315 C6	I278 I4
3337 I1	7315 C7	I279 I2
3338 I2	7318 G4	I280 I3
3339 J2	7319 H5	I281 I10
3340 C7	7320 I1	I282 I4
3341 B9	7321 J1	I283 I5
3342 B9	7322 I2	I284 I2
3343 B10	7323 I2	I285 I6
3344 B10	7325 D6	I286 I7
3345 A10	7326 D7	I287 I6
3346 D7	7328 I4	I288 I5
3347 E10	7333 J5	I289 I1
3348 C7	7340-A B8	I290 J2
3349 C7	7340-B C8	I291 J7
3350 D10	7341 B9	I292 J9
3351 I8	7343 B10	I293 J10
3352 B11	7352 B11	I294 J5
3353 C12	7356 F7	I295 C6
3354 C12	7357 F7	I296 D5
3355 C12	7358 E8	I297 F13
3356 F6	7360 F10	I298 F13
3357 F7	7362 E10	I299 F13
3358 F8	7364 F11	I300 F14
3359 F8	7365 I7	I301 F14
3360 F9	7366 I7	
3361 E10	7367 I8	
3362 E10	7370-A H13	
3363 H2	7370-B G11	
3364 F11	F300 B2	
3365 F12	F301 B2	
3366 E12	F303 D2	
3367 I6	F304 D2	
3368 J7	F305 D2	
3369 I8	F306 D2	
3370 G10	F307 E2	
3371 H10	F308 E2	
3372 D5	F309 E2	
3373 I10	F310 E2	
3374 H11	F311 F2	
3375 H12	F312 F2	
3376 I12	F313 F2	
3377 I12	F314 G2	
3378 J10	F315 G2	
3379 J10	F316 G2	
3900 I1	F317 G2	



CONTROL FUNCTIONS 1



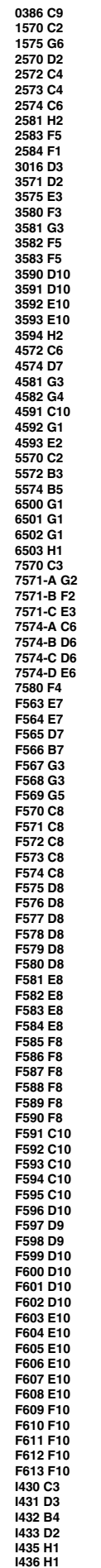
CONTROL FUNCTIONS 2 (BASIC & ENHANCED VERSION)



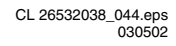
CL 26532038_042.eps
030502

0305 K2	F553 G2
0315 H5	F554 G2
0316 I5	F555 G2
0319 E2	F556 G2
0320 B2	F557 G2
1100 C3	F558 H5
1105 F3	F559 H5
2530 C8	F560 I5
2531 C6	F561 I5
2533 G5	F562 F2
2534 G6	I400 C2
2535 F5	I401 C7
2537 D2	I402 C7
2538 D3	I403 D7
2541 C9	I405 D6
2542 C3	I406 D6
2547 C3	I407 D5
2548 C3	I408 D14
2550 A3	I409 D13
2551 A3	I410 F10
2552 A3	I411 G9
2553 A4	I412 G9
2554 H10	I413 H9
2555 H10	I414 H12
2557 H4	I415 D2
2558 G4	I416 H12
2559 H3	I417 G12
2560 G3	I418 H12
2562 H2	I419 F12
2563 H2	I420 F12
2564 H2	
2565 I2	
2566 I2	
3530 C7	
3531 E7	
3532 E7	
3533 G5	
3534 G6	
3535 F5	
3536 F4	
3537 H5	
3538 I5	
3539 H5	
3540 B9	
3541 B9	
3542 B12	
3543 A12	
3544 B13	
3545 G3	
3546 C13	
3547 C13	
3548 D14	
3549 I5	
3550 B3	
3551 B3	
3552 B3	
3553 B3	
3554 G5	
3555 G6	
3556 E9	
3557 G3	
3558 G3	
3559 G3	
3560 G3	
3561 C13	
3562 D13	
3563 C13	
3564 B14	
3565 C14	
3566 C13	
3567 C13	
3568 D7	
3569 E7	
3570 F9	
3572 E7	
3573 D7	
5530 C5	
5541 C9	
5551 H13	
5552 H13	
5553 G13	
5554 F13	
5555 E13	
7530 D6	
7540 A10	
7550-A I12	
7550-B H10	
7555-A F10	
7555-B E12	
7555-C G12	
7563 D14	
F527 C12	
F528 B12	
F529 D2	
F530 B2	
F531 B2	
F532 B2	
F533 B2	
F534 B2	
F535 B2	
F536 C2	
F537 C2	
F538 C2	
F539 C2	
F540 C3	
F542 E2	
F543 E2	
F544 E2	
F545 D2	
F546 E2	
F547 F2	
F548 F2	
F549 F2	
F550 F2	
F551 F2	
F552 F2	

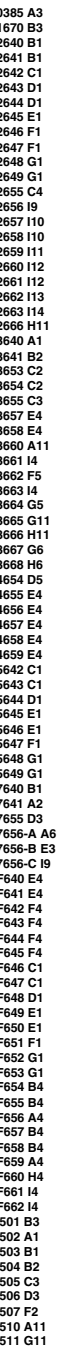
SC9 SCALER-CLOCK-GENERATOR (BASIC & ENHANCED VERSION)



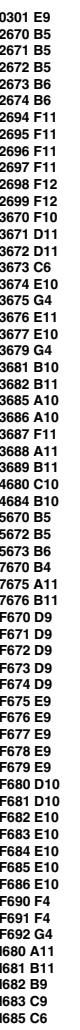
FROM SC5



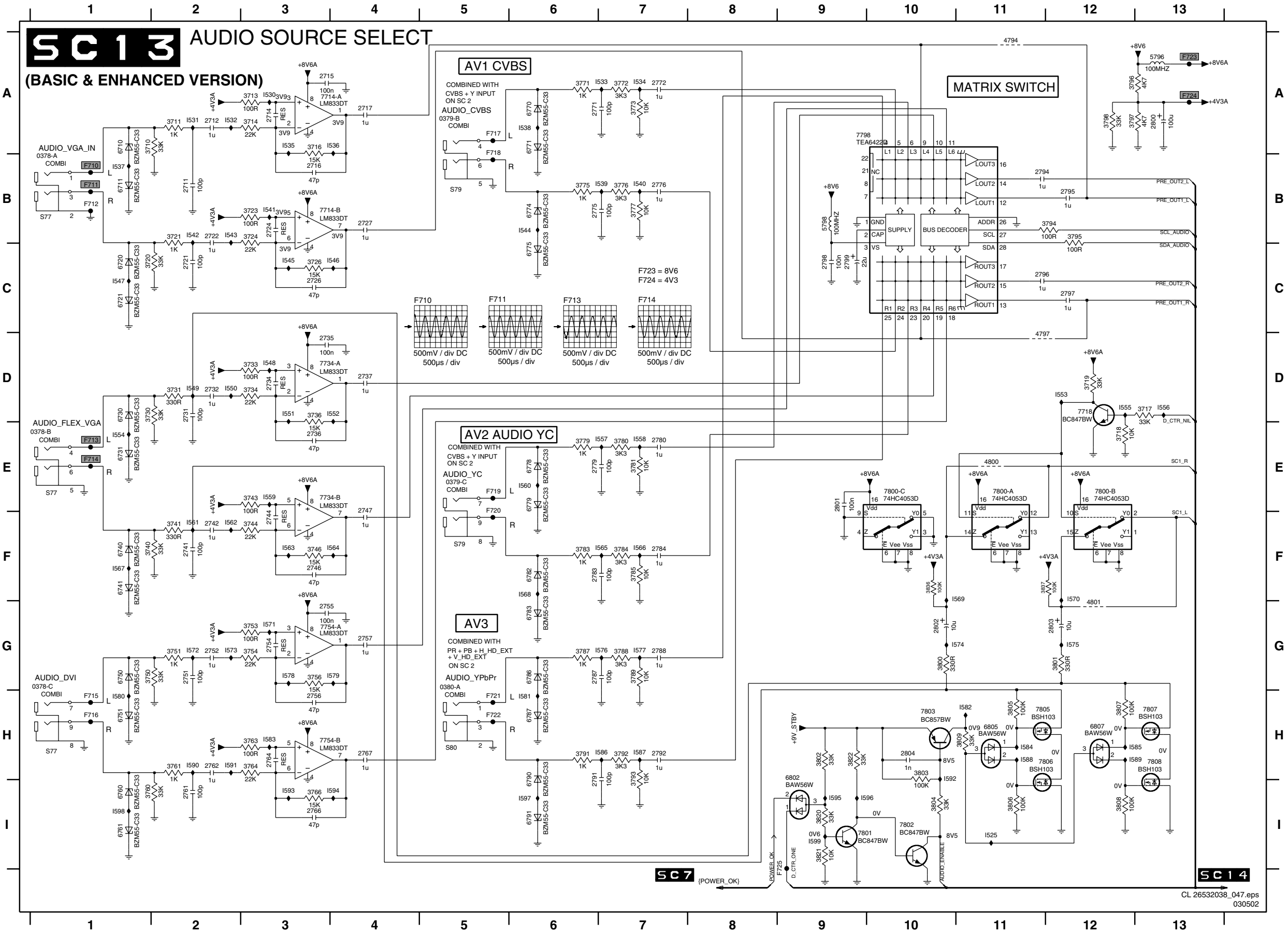
BACK-END-EPLD (BASIC & ENHANCED VERSION)



SC 1 2 BACK-END-LVDS-OUTPUT (BASIC & ENHANCED VERSION)

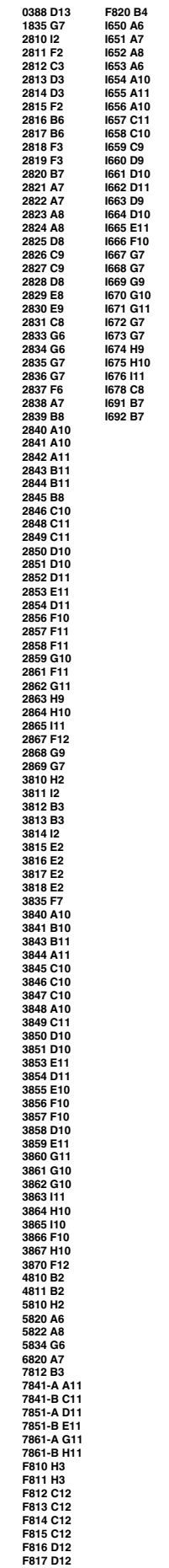


SCAVIO Panel: Audio Source Selection



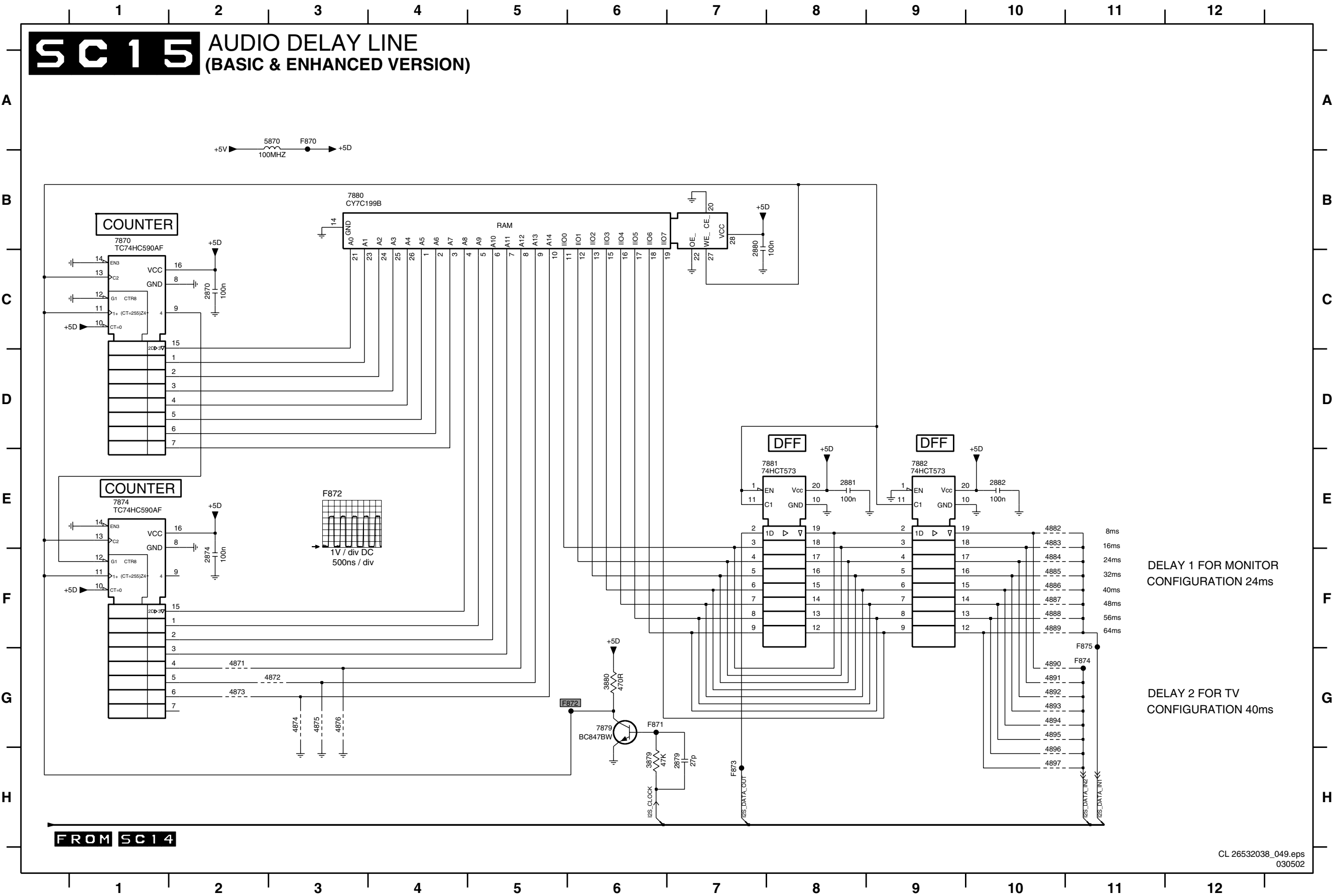
0378-A A1	3800 G10	I565 F7
0378-B E1	3801 G12	I566 F7
0378-C G1	3802 H9	I567 F1
0379-A A5	3803 H10	I568 F6
0379-C E5	3804 I10	I569 F11
0380-A G5	3805 H11	I570 F12
2711 B2	3806 I11	I571 G3
2712 A2	3807 H12	I572 G2
2714 A3	3808 I12	I573 G2
2715 A3	3809 H11	I574 G11
2716 B3	3820 I9	I575 G12
2717 A4	3821 I9	I576 G7
2721 C2	3822 H9	I577 G7
2722 B2	3836 F10	I578 G3
2724 B3	3837 F11	I579 G4
2726 C3	4794 A11	I580 H1
2727 B4	4797 D11	I581 H6
2731 D2	4800 E11	I582 H11
2732 D2	4801 G12	I583 H3
2734 D3	5796 A13	I584 H11
2735 D3	5798 B9	I585 H13
2736 E3	6710 A1	I586 H7
2737 D4	6711 B1	I587 H7
2741 F2	6720 C1	I588 H11
2742 F2	6721 C1	I589 H13
2744 F3	6730 D1	I590 H2
2746 F3	6731 E1	I591 H2
2747 F4	6740 F1	I592 H10
2751 G2	6741 F1	I593 I3
2752 G2	6750 G1	I594 I4
2754 G3	6751 H1	I595 I9
2755 G3	6760 I1	I596 I10
2756 H3	6761 I1	I597 I6
2757 G4	6770 A6	I598 I1
2761 I2	6771 A6	I599 I9
2762 H2	6774 B6	
2764 H3	6775 C6	
2766 I3	6778 E6	
2769 E6	6779 E6	
2771 A6	6782 F6	
2772 A7	6783 G6	
2775 B6	6786 G6	
2776 B7	6787 H6	
2779 E6	6790 H6	
2780 E7	6791 I6	
2783 F6	6802 I9	
2784 F7	6805 H11	
2787 G6	6807 H12	
2788 G7	7714-A A3	
2791 H6	7714-B B3	
2792 H7	7718 D12	
2794 B11	7734-A D3	
2795 B12	7734-B E3	
2796 C11	7754-A G3	
2797 C12	7754-B H3	
2798 C9	7798 A9	
2799 C9	7800-A E11	
2800 A13	7800-B E12	
2801 E9	7800-C E10	
2802 G10	7801 I9	
2803 G12	7802 I10	
2804 H10	7803 H10	
3710 A1	7805 H11	
3711 A2	7806 H12	
3713 A3	7807 H13	
3714 A3	7808 H13	
3716 A3	F710 B1	
3717 D13	F711 B1	
3718 E12	F712 B1	
3719 D12	F713 E1	
3720 C1	F714 E1	
3721 B2	F715 H1	
3723 B3	F716 H1	
3724 B3	F717 A5	
3726 C3	F718 B5	
3730 D1	F719 E5	
3731 D2	F720 F5	
3733 D3	F721 H5	
3734 D3	F722 H5	
3736 D3	F723 A13	
3740 F1	F724 A13	
3741 F2	F725 I9	
3743 E3	I525 I11	
3744 F3	I530 A3	
3746 F3	I531 A2	
3750 G1	I532 A2	
3751 G2	I533 A7	
3753 G3	I534 A7	
3754 G3	I535 A3	
3756 G3	I536 A4	
3760 I1	I537 B1	
3761 H2	I538 A6	
3763 H3	I539 B7	
3764 H3	I540 B7	
3766 I3	I541 B3	
3771 A6	I542 B2	
3772 A7	I543 B2	
3773 A7	I544 B6	
3775 B6	I545 C3	
3776 B7	I546 C4	
3777 B7	I547 C1	
3779 E6	I548 D3	
3780 E7	I549 D2	
3781 E7	I550 D2	
3783 F6	I551 D3	
3784 F7	I552 D4	
3785 F7	I553 D12	
3787 G6	I554 E1	
3788 G7	I555 D12	
3789 G7	I556 D13	
3791 H6	I557 E7	
3792 H7	I558 E7	
3793 H7	I559 E3	
3794 B12	I560 E6	
3795 B12	I561 F2	
3796 A12	I562 F2	
3797 A12	I563 F3	
3798 A12	I564 F4	

FROM TO SC7 9 13



SCAVIO Panel: Audio Delay Line

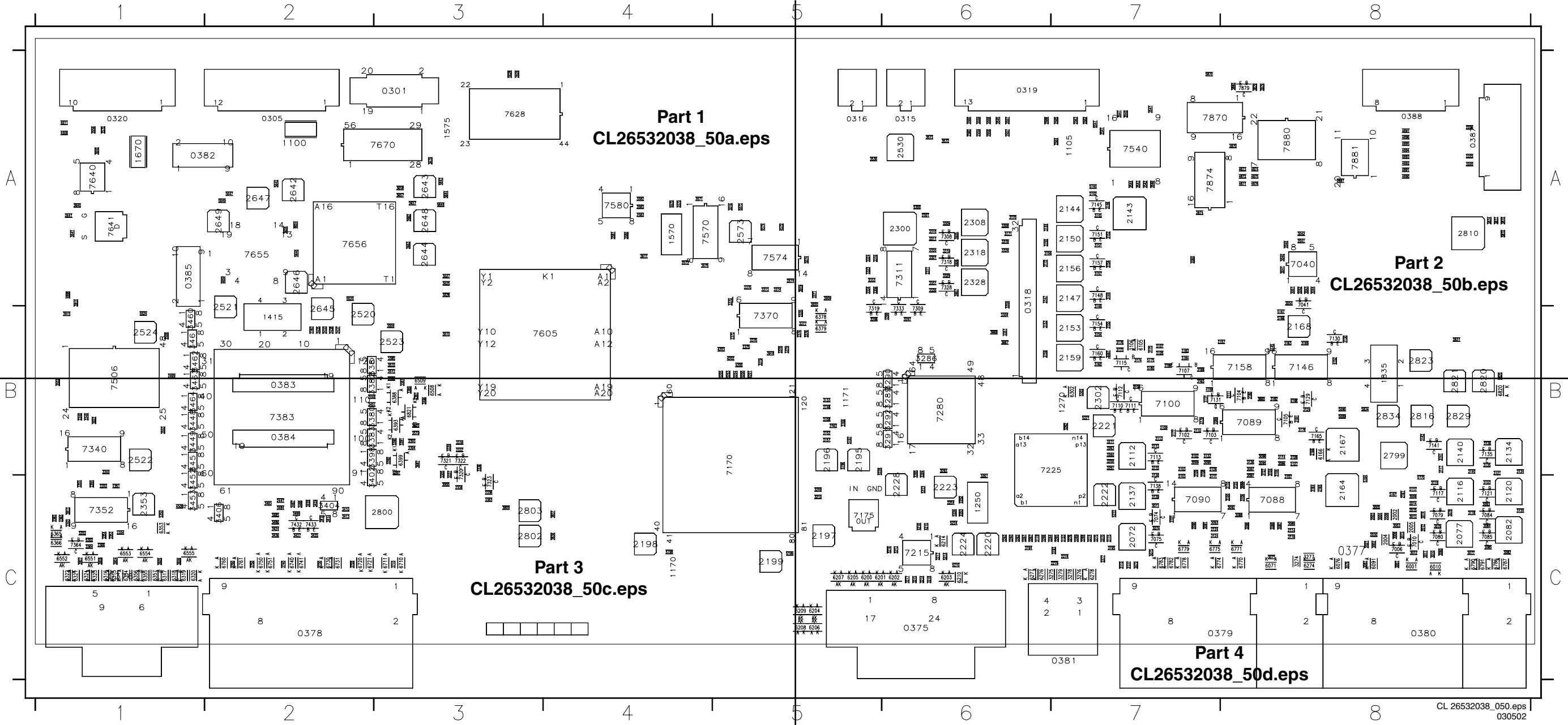
SC15 AUDIO DELAY LINE
(BASIC & ENHANCED VERSION)



2870 C2
2874 F2
2879 H7
2880 B7
2881 E8
2882 E10
3879 H6
3880 G6
4871 G2
4872 G3
4873 G2
4874 G3
4875 G3
4876 G3
4882 E10
4883 E10
4884 F10
4885 F10
4886 F10
4887 F10
4888 F10
4889 F10
4890 G10
4891 G10
4892 G10
4893 G10
4894 G10
4895 G10
4896 G10
4897 H10
5870 A3
7870 B1
7874 E1
7879 G6
7880 B3
7881 E7
7882 E9
F870 A3
F871 G6
F872 G6
F873 H7
F874 G11
F875 F11

Layout SCAVIO Panel (Overview Top View)

0301 A3	2005 C8	2120 C8	2217 C6	2311 A6	2541 A7	2810 A8	3051 A8	3103 B7	3137 C7	3174 B7	3260 B7	3321 A6	3379 B5	3452 C1	3558 A6	3809 C3	4203 B5	5180 B7	5834 B8	6322 C1	6761 C2	7107 B7	7320 B3
0305 A2	2008 C8	2123 C7	2220 C6	2318 A6	2557 A6	2816 B8	3071 C8	3104 B8	3138 C7	3175 B7	3261 C6	3323 A5	3380 B2	3453 C1	3559 A6	3810 A8	4215 C6	5196 B5	5870 A7	6323 C1	6770 C8	7110 B7	7321 B3
0315 A6	2012 C8	2124 C7	2221 B7	2328 A6	2558 A6	2820 B8	3072 C7	3105 B8	3139 C7	3176 B7	3262 B7	3324 A5	3381 B2	3460 B1	3560 A6	3811 A8	4216 C6	5197 B5	6001 C8	6324 C1	6771 C8	7111 B7	7322 B3
0316 A5	2014 C8	2127 B8	2222 C7	2335 B5	2559 A6	2821 B8	3073 C7	3106 C8	3140 B8	3177 B7	3263 B7	3328 A6	3382 B2	3461 B1	3570 A1	3814 A8	4381 B3	5198 C4	6010 C8	6325 C1	6774 C7	7112 B7	7323 C3
0318 A6	2015 C8	2128 B7	2223 C6	2336 C3	2560 A6	2823 B8	3074 C7	3107 C8	3141 B8	3178 B8	3271 B7	3329 A6	3383 B2	3462 B1	3571 A4	3836 C4	4500 C1	5199 C5	6071 C8	6354 C1	6775 C7	7113 B7	7328 A6
0319 A6	2021 C8	2134 B8	2224 C6	2337 B3	2562 A7	2829 B8	3075 C7	3108 B7	3142 B8	3179 B7	3274 C8	3330 A6	3385 B3	3463 B1	3572 A6	3837 C4	4572 A5	5210 C6	6076 C8	6355 C1	6778 C7	7115 B7	7333 B6
0320 A1	2030 C8	2137 C7	2225 A8	2338 C3	2563 A7	2831 B8	3076 C8	3109 B7	3144 A6	3180 B8	3275 C6	3331 A6	3386 B3	3464 B1	3573 A6	3879 A8	4574 A5	5214 C6	6091 C8	6356 C1	6779 C7	7117 C8	7340 B1
0375 C6	2040 A8	2140 B8	2226 A8	2340 B1	2564 A7	2834 B8	3077 C8	3110 C8	3145 A7	3181 B8	3276 C7	3333 A5	3387 B3	3483 C2	3575 A4	3880 A8	4654 A2	5221 B7	6105 B7	6357 C1	6782 C7	7121 C8	7352 C1
0376 C1	2041 A8	2142 A7	2228 C6	2343 C1	2565 A7	2870 A8	3078 C8	3111 C7	3146 A7	3182 B8	3277 C8	3334 A5	3389 B3	3484 C2	3580 A4	3900 C3	4659 A2	5222 C7	6166 B8	6365 C1	6783 C7	7129 B8	7364 C1
0378 C2	2042 A8	2143 A7	2252 C6	2351 C1	2566 A6	2874 A7	3079 C8	3112 C7	3147 A6	3183 B7	3278 C7	3336 B3	3390 B3	3485 C2	3581 A4	3905 A6	4871 A8	5223 C6	6200 C5	6366 C1	6786 C8	7130 B8	7370 B5
0379 C7	2060 A7	2144 A7	2253 C6	2352 C1	2570 A4	2879 A8	3080 C8	3113 B7	3148 B7	3184 B7	3279 C7	3337 B3	3391 B3	3486 C2	3582 A4	3906 A6	4872 A8	5224 C6	6201 C5	6378 B5	6787 C8	7131 B7	7383 B2
0380 C8	2072 C7	2145 B8	2254 C6	2353 C1	2572 A4	2881 A8	3081 C8	3114 B8	3149 A7	3186 B7	3284 B6	3338 B3	3392 B3	3487 C2	3583 A4	3907 A6	4873 A8	5226 C6	6202 C6	6379 B5	6790 C8	7135 B8	7432 C2
0381 C7	2077 C8	2146 B5	2260 C6	2354 C1	2573 A5	3001 C8	3082 C8	3115 B7	3150 A6	3188 B7	3285 B6	3339 B3	3393 B3	3488 C2	3610 B3	3909 A5	4874 A8	5228 B5	6203 C6	6388 B3	6791 C8	7138 C7	7433 C2
0382 A1	2082 C8	2147 A7	2261 C6	2355 C1	2574 A5	3002 C8	3083 C8	3116 C8	3151 A7	3189 B8	3286 B6	3340 B1	3394 B3	3489 C2	3611 A4	3913 C1	4875 A8	5300 A6	6204 C5	6393 B3	6820 B8	7141 B8	7506 B1
0383 B2	2088 C8	2150 A7	2262 C6	2365 C1	2583 A4	3003 C8	3084 C8	3117 B8	3152 A7	3193 C7	3289 B6	3346 B1	3397 B3	3496 B3	3625 A3	3914 A1	4876 A8	5302 B7	6205 C5	6399 B3	6821 B3	7145 A7	7540 A7
0384 B2	2089 B7	2151 B5	2263 C6	2370 A5	2628 A3	3004 C8	3085 C8	3118 C8	3153 B6	3194 C6	3290 B6	3351 B6	3398 B2	3502 B1	3626 A3	3915 B1	4880 A8	5350 C1	6206 C5	6508 B3	7006 C8	7146 B8	7570 A4
0385 A1	2090 C7	2152 B5	2264 C6	2372 B5	2640 A1	3005 C8	3086 B8	3119 C8	3154 B7	3195 C7	3291 B6	3352 C1	3401 B2	3503 B1	3627 A3	3918 B5	4891 A8	5352 C1	6207 C5	6509 B3	7010 C8	7148 A7	7574 A5
0387 A8	2097 C8	2153 B7	2265 C7	2375 B5	2641 A1	3006 C8	3087 C8	3120 C8	3155 B7	3200 B5	3292 B6	3353 C1	3402 C2	3506 B1	3640 A1	3919 A5	4892 A8	5520 A2	6208 C5	6551 C1	7040 A8	7151 A7	7580 A4
0388 A8	2103 C7	2156 A7	2266 C6	2376 B5	2642 A2	3008 C8	3088 C8	3121 B8	3156 A6	3203 B5	3293 B6	3354 C1	3404 C2	3510 B3	3641 A1	3920 A5	4893 A8	5524 B1	6209 C5	6552 C1	7041 A8	7154 B7	7605 B4
1100 A2	2105 B7	2157 B8	2267 C6	2383 B2	2643 A3	3009 B3	3089 C8	3122 B7	3157 A7	3204 B5	3297 B6	3355 C1	3406 C2	3512 B3	3655 A2	3922 B1	4894 A8	5541 A7	6210 C6	6553 C1	7074 C7	7157 A7	7628 A3
1105 A7	2106 B7	2158 B5	2268 C7	2433 B2	2644 A3	3010 C8	3090 B7	3123 C8	3158 A7	3205 B5	3298 B5	3359 A6	3410 C2	3519 B3	3657 A3	3924 C1	4895 A8	5570 A4	6214 C6	6554 C1	7075 C7	7158 B8	7640 A1
1170 C4	2107 B7	2159 B7	2269 C7	2435 B2	2645 B2	3011 C8	3091 C7	3124 C7	3159 B6	3209 C5	3299 B6	3363 C3	3413 C2	3520 B3	3658 A3	3925 C1	4896 A8	5572 A5	6274 C8	6555 C1	7079 C8	7160 B7	7641 A1
1171 B5	2108 B7	2161 C8	2270 C7	2437 B2	2646 A2	3012 C8	3092 C8	3125 C8	3160 B7	3210 C5	3304 B6	3364 C1	3414 C2	3536 A5	3660 B8	3926 C1	4897 A8	5574 A5	6276 C6	6710 C3	7080 C8	7165 B8	7655 A2
1250 C6	2109 B7	2164 C8	2274 C7	2438 B2	2647 A2	3013 C8	3093 C7	3126 B8	3161 B7	3213 C6	3305 B3	3365 C1	3415 C2	3540 A7	3667 B6	3927 C1	4898 A1	5628 A3	6277 C6	6711 C3	7084 C8	7170 B5	7656 A2
1270 B7	2110 B7	2165 C8	2275 C7	2446 B2	2648 A3	3014 C8	3094 B8	3127 B8	3162 B5	3214 C6	3306 A5	3366 C1	3424 C2	3541 A7	3668 B6	3928 C1	5089 B8	5642 A2	6278 C7	6720 C2	7085 C8	7175 C5	7670 A3
1415 B2	2111 B8	2166 B8	2276 C7	2447 C2	2649 A2	3015 C8	3095 C8	3128 B8	3163 B8	3215 C6	3308 A6	3370 A5	3425 C2	3542 A7	3679 A3	4008 A1	5090 B8	5643 A3	6302 B7	6721 C2	7088 C8	7215 C6	7870 A7
1570 A4	2112 B7	2167 B8	2277 C7	2499 B1	2657 A3	3016 A5	3096 C8	3129 B8	3164 C8	3216 C6	3309 A6	3371 A5	3426 C2	3543 A7	3687 B3	4011 A1	5140 A7	5644 A3	6315 C1	6730 C2	7089 B8	7225 B6	7874 A7
1575 A3	2113 B7	2168 B8	2278 C7	2520 B2	2662 A3	3040 A8	3097 B8	3130 B8	3165 B7	3217 C6	3310 A6	3373 A5	3427 C2	3544 A7	3710 C3	4146 B8	5161 C8	5646 A2	6316 C1	6731 C2	7090 C7	7280 B6	7879 A8
1670 A1	2114 C8	2195 B5	2279 C7	2521 B2	2663 A3	3041 A8	3098 B8	3131 B7	3166 B5	3218 C6	3311 A6	3374 A5	3428 C2	3545 A6	3720 C2	4152 B8	5164 C8	5647 A2	6317 C1	6740 C2	7100 B7	7308 A6	7880 A8
1835 B8	2115 C7	2196 B5	2300 A6	2522 B1	2799 B8	3042 A8	3099 B7	3133 B5	3170 A6	3219 B5	3316 A5	3375 B5	3429 C2	3546 A7	3730 C2	4158 B7	5166 B8	5648 A3	6318 C1	6741 C2	7102 B7	7309 B6	7881 A8
2002 C8	2116 C8	2197 C5	2301 A6	2523 B3	2800 C3	3043 A8	3100 C8	3134 B8	3171 A6	3220 A8	3318 A6	3376 B5	3448 B1	3547 A7	3740 C2	4200 B5	5167 B8	5649 A2	6319 C1	6750 C2	7103 B7	7311 A6	
2003 C8	2117 C8	2198 C4	2302 B7	2524 B1	2802 C3	3044 A8	3101 C7	3135 B8	3172 A6	3250 B7	3319 A6	3377 B5	3449 B1	3556 A1	3750 C2	4201 B5	5170 C8	5810 A8	6320 C1	6751 C2	7104 B8	7318 A6	
2004 C8	2119 C6	2199 C5	2308 A6	2530 A6	2803 C3	3050 A8	3102 B7	3136 B8	3173 B7	3251 B7	3320 A6	3378 B5	3451 B1	3557 A6	3760 C2	4202 B5	5175 B7	5820 B8	6321 C1	6760 C2	7105 B8	7319 B5	



5



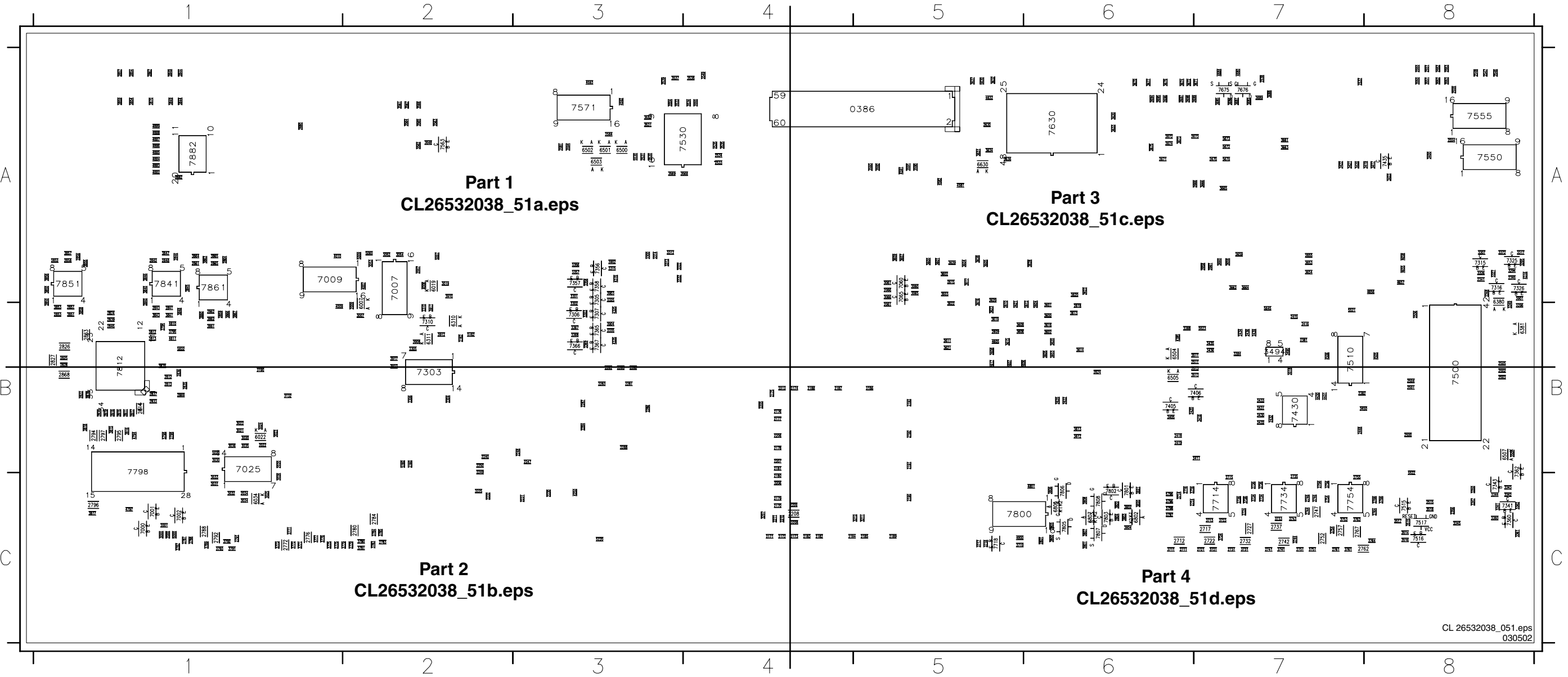
8



CL 26532038_50d.eps
020402

Layout SCAVIO Panel (Overview Bottom View)

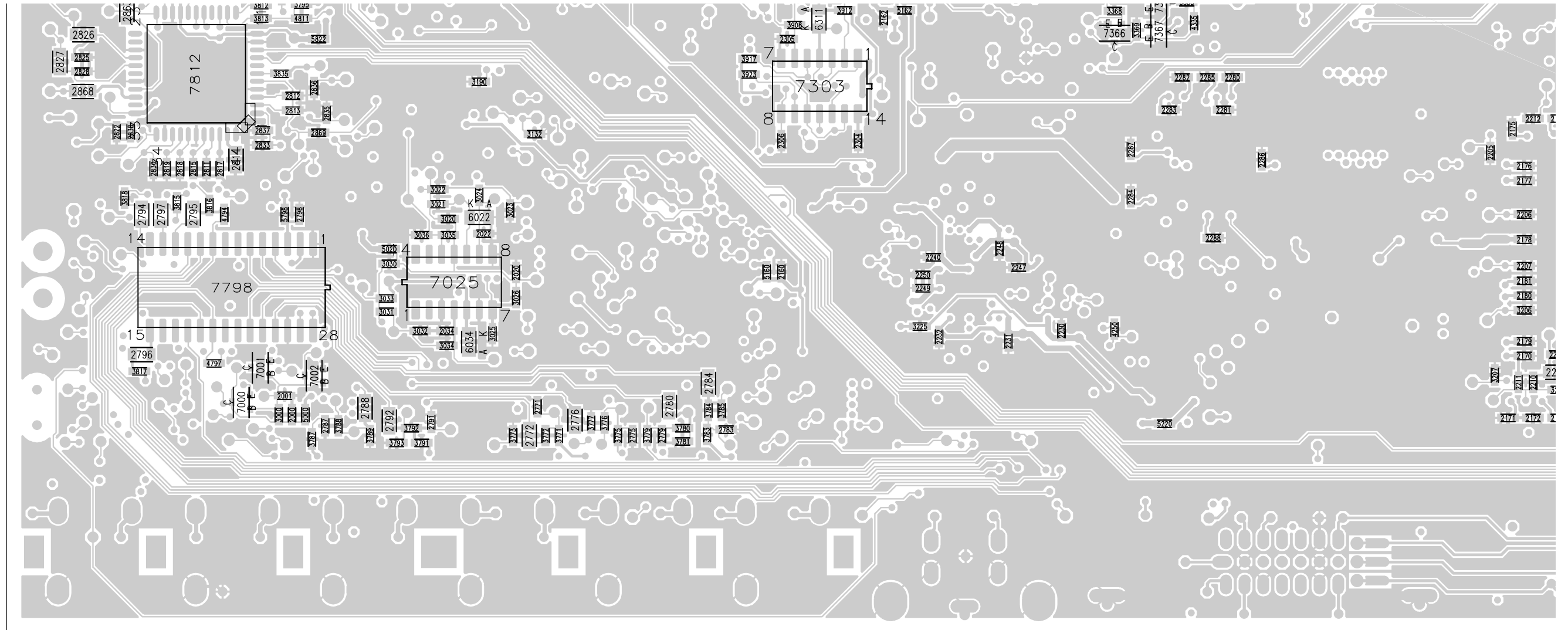
0386 A5	2193 B5	2415 B7	2581 A3	2661 A7	2751 C7	2817 B1	2862 B1	3190 B1	3356 A3	3515 C8	3600 A5	3665 A7	3751 C7	3804 C6	3862 B1	4593 A3	5630 A5	7303 B2	7676 A7
2000 C1	2205 B4	2416 B7	2584 A3	2666 A7	2752 C7	2818 B1	2863 B1	3206 C4	3357 A3	3516 C8	3601 A5	3666 A7	3753 C7	3805 C6	3863 A1	4605 B5	5645 B7	7305 A3	7714 C5
2001 C1	2206 B4	2418 B6	2600 B6	2670 A7	2754 C7	2819 B1	2864 A1	3207 C4	3358 A3	3517 C8	3602 A5	3667 A6	3754 C7	3806 C6	3864 A1	4632 A5	5670 A7	7306 B3	7718 C7
2007 A2	2207 B4	2419 B6	2601 B6	2671 A6	2755 C7	2822 B1	2865 A1	3208 C4	3360 C8	3518 C8	3603 A5	3671 A7	3756 C7	3807 C6	3865 A1	4655 A8	5672 A7	7307 B3	7734 C7
2009 B2	2208 C4	2420 B6	2602 B6	2672 A6	2756 C7	2824 B1	2867 A1	3211 C5	3361 C8	3530 A3	3604 A5	3672 A6	3761 C7	3808 C6	3866 B1	4656 A8	5673 A7	7310 B2	7754 C7
2020 B1	2209 C4	2432 B7	2603 B6	2673 A7	2757 C7	2825 B1	2868 B1	3212 C5	3362 C8	3531 A3	3605 A5	3673 A6	3763 C7	3812 B1	3867 B1	4657 A8	5796 C6	7315 A8	7798 B1
2022 B1	2210 C4	2434 B7	2604 B6	2674 A6	2761 C7	2826 B1	2869 B1	3225 C2	3367 B3	3532 A3	3606 B5	3674 A6	3764 C8	3813 B1	3870 A1	4658 A8	5798 B1	7316 A8	7800 C5
2034 C1	2211 C4	2436 B7	2605 B6	2694 A6	2762 C7	2827 B1	2880 A1	3294 A8	3368 B3	3533 A3	3607 A5	3675 A6	3766 C8	3815 B1	3901 A8	4680 A7	5822 B1	7325 A8	7801 C6
2061 B5	2212 B4	2439 B7	2606 B5	2695 A6	2764 C8	2828 B1	2882 A1	3295 A8	3369 B3	3534 A4	3608 B5	3676 A6	3771 C1	3816 B1	3902 A3	4684 A7	6007 B2	7326 A8	7802 C6
2066 A5	2230 C3	2448 B7	2607 B5	2696 A6	2766 C8	2830 B1	3000 C1	3296 B8	3372 A8	3535 A4	3609 A5	3677 A6	3772 C1	3817 C1	3903 A3	4794 B1	6019 A2	7341 C8	7803 C6
2160 B2	2231 C3	2500 B8	2608 B5	2697 A6	2767 C7	2833 B1	3007 B2	3300 A3	3384 B7	3537 A3	3612 B6	3681 A7	3773 C1	3818 B1	3904 B3	4797 C1	6022 B1	7343 C8	7805 C6
2162 B2	2232 C2	2501 B8	2609 B5	2698 A6	2771 C1	2835 B1	3018 B7	3301 A3	3388 B6	3538 A4	3613 B6	3682 A7	3775 C1	3820 C6	3908 B2	4800 C5	6034 C1	7356 A3	7806 C6
2170 C4	2240 B2	2502 B8	2610 B5	2699 A7	2772 C1	2836 B1	3019 A2	3302 B3	3400 A8	3539 A3	3615 B5	3685 A7	3776 C1	3821 C6	3910 A2	4801 C6	6310 B2	7357 A3	7807 C6
2171 C4	2247 B3	2503 B8	2611 B5	2711 C6	2775 C1	2837 B1	3020 B1	3303 B3	3405 B6	3548 A2	3616 A5	3686 A7	3777 C1	3822 C6	3911 B2	4810 B1	6311 B2	7358 A3	7808 C6
2172 C4	2248 B3	2504 B8	2612 B6	2712 C6	2776 C1	2838 B1	3021 B1	3307 A8	3411 B7	3549 A4	3617 A5	3688 A7	3779 C2	3835 B1	3912 B2	4811 B1	6380 A8	7360 C8	7812 B1
2173 C4	2249 B2	2505 B8	2613 B6	2714 C6	2779 C2	2839 B1	3022 B1	3312 A3	3417 A8	3550 A8	3620 A6	3689 A7	3780 C2	3840 A1	3917 B2	4882 A1	6381 B8	7362 B8	7841 A1
2174 B4	2250 B2	2506 B8	2614 B6	2715 C7	2780 C2	2840 A1	3023 B1	3313 A3	3418 B7	3551 A8	3621 B5	3711 C6	3781 C2	3841 B1	3923 B2	4883 A1	6500 A3	7365 B3	7851 A1
2175 B4	2280 B3	2511 B7	2615 A5	2716 C6	2783 C2	2841 B1	3024 B1	3314 A3	3419 A8	3552 A8	3622 B5	3713 C7	3783 C2	3843 B1	4006 A2	4884 A1	6501 A3	7366 B3	7861 A1
2176 B4	2281 B3	2513 B7	2616 B6	2717 C7	2784 C2	2842 A1	3025 C1	3315 A3	3420 A7	3553 A8	3623 B5	3714 C6	3784 C2	3844 A1	4007 A2	4885 A1	6502 A3	7367 B3	7882 A1
2177 B4	2282 B3	2515 C8	2617 B5	2721 C7	2787 C1	2843 A1	3026 C1	3317 A8	3421 A7	3554 A3	3628 A6	3716 C6	3785 C2	3845 A1	4009 B1	4886 A1	6503 A3	7405 B6	
2178 B4	2283 B3	2531 A3	2618 B6	2722 C7	2788 C1	2844 A1	3030 B1	3322 A3	3422 A7	3555 A4	3630 A6	3717 C5	3787 C1	3846 A1	4010 A1	4887 A1	6504 B6	7406 B7	
2179 C4	2284 B3	2533 A4	2619 B5	2724 C7	2791 C1	2845 B1	3031 C1	3325 A3	3423 A8	3561 A2	3631 A5	3718 C5	3788 C1	3847 A1	4250 C3	4888 A1	6505 B6	7430 B7	
2180 C4	2285 B3	2534 A4	2620 B6	2726 C7	2792 C1	2846 A1	3032 C1	3326 A8	3430 B7	3562 A2	3632 A5	3719 C5	3789 C1	3848 B1	4315 A3	4889 A1	6507 B8	7435 A8	
2181 B4	2286 B3	2535 A4	2621 B5	2727 C7	2794 B1	2848 A1	3033 C1	3327 A8	3431 B7	3563 A2	3633 A6	3721 C7	3791 C1	3849 A1	4316 A8	5000 C1	6630 A5	7500 B8	
2182 C4	2287 B3	2537 A7	2622 B6	2731 C7	2795 B1	2849 A1	3034 C1	3332 A3	3432 B7	3564 A2	3634 A5	3723 C7	3792 C1	3850 A1	4325 B3	5007 A2	6802 C6	7510 B7	
2183 C4	2288 B3	2538 A7	2623 A6	2732 C7	2796 C1	2850 A1	3035 B1	3335 B3	3433 B7	3565 A2	3636 A5	3724 C7	3793 C1	3851 B1	4335 B3	5009 A2	6805 C6	7515 C8	
2184 C4	2304 B2	2546 A8	2624 B6	2734 C7	2797 B1	2851 B1	3036 B1	3341 C8	3435 B7	3566 A2	3637 A5	3726 C7	3794 B1	3853 B1	4385 B6	5020 B1	6807 C6	7516 C8	
2185 C5	2305 B2	2547 A8	2625 B6	2735 C7	2798 B1	2852 A1	3052 A2	3342 C8	3436 B7	3567 A2	3638 A5	3731 C7	3795 B1	3854 A1	4430 B7	5060 A2	7000 C1	7517 C8	
2186 B5	2306 B2	2548 A8	2629 A5	2736 C7	2801 C6	2853 B1	3053 A2	3343 C8	3450 B7	3568 A4	3639 A5	3733 C7	3796 C6	3855 A1	4431 B7	5160 B2	7001 C1	7530 A3	
2187 B4	2310 B2	2550 A8	2630 A5	2737 C7	2804 C6	2854 A1	3054 A2	3344 C8	3490 B7	3569 A3	3653 A7	3734 C7	3797 C6	3856 A1	4505 B8	5162 B2	7002 C1	7550 A8	
2188 B4	2341 A8	2551 A8	2655 A7	2741 C7	2811 B1	2856 A1	3060 A5	3345 C8	3494 B7	3590 A5	3654 A7	3736 C7	3798 C6	3857 A1	4506 B7	5220 C3	7007 A2	7555 A8	
2189 C5	2345 A8	2552 A8	2656 A7	2742 C7	2812 B1	2857 A1	3061 A5	3347 C8	3507 B8	3591 A5	3661 A7	3741 C7	3800 C6	3858 B1	4581 A5	5521 B7	7009 A1	7563 A2	
2190 C5	2356 C8	2553 A8	2658 A7	2744 C7	2813 B1	2858 A1	3065 A5	3348 A8	3511 B7	3592 A5	3662 A7	3743 C7	3801 C6	3859 A1	4582 A5	5522 C8	7025 B1	7571 A3	
2191 B5	2381 B7	2554 A8	2659 A7	2746 C7	2814 B1	2859 B1	3066 A5	3349 B8	3513 B7	3593 A5	3663 A7	3744 C7	3802 C6	3860 B1	4591 A5	5523 B7	7060 A5	7630 A6	
2192 B5	2382 B7	2555 A8	2660 A7	2747 C7	2815 B1	2861 A1	3132 B1	3350 C8	3514 C8	3594 A3	3664 A7	3746 C7	3803 C6	3861 B1	4592 A3	5530 A3	7065 A5	7675 A7	



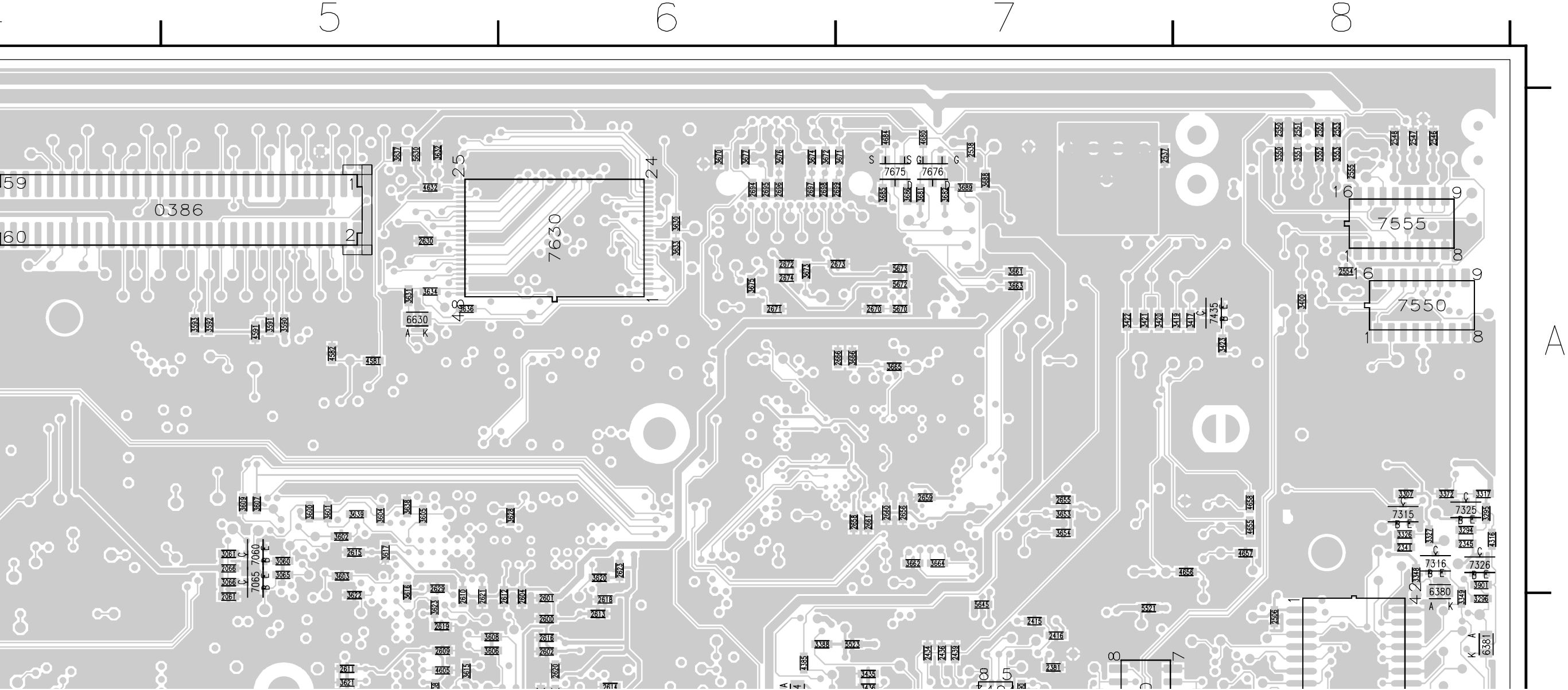
4



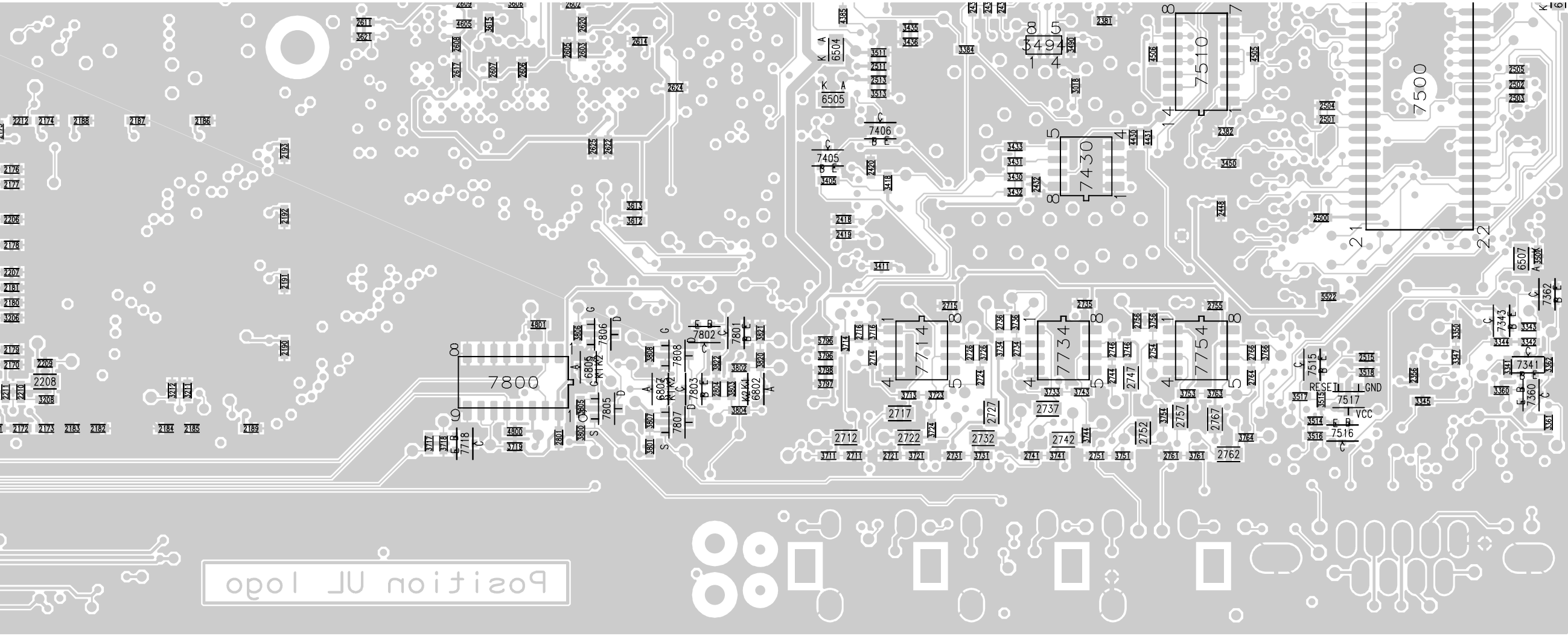
C



Layout SCAVIO Panel (Part 3 Bottom View)



Layout SCAVIO Panel (Part 4 Bottom View)



B

C

5

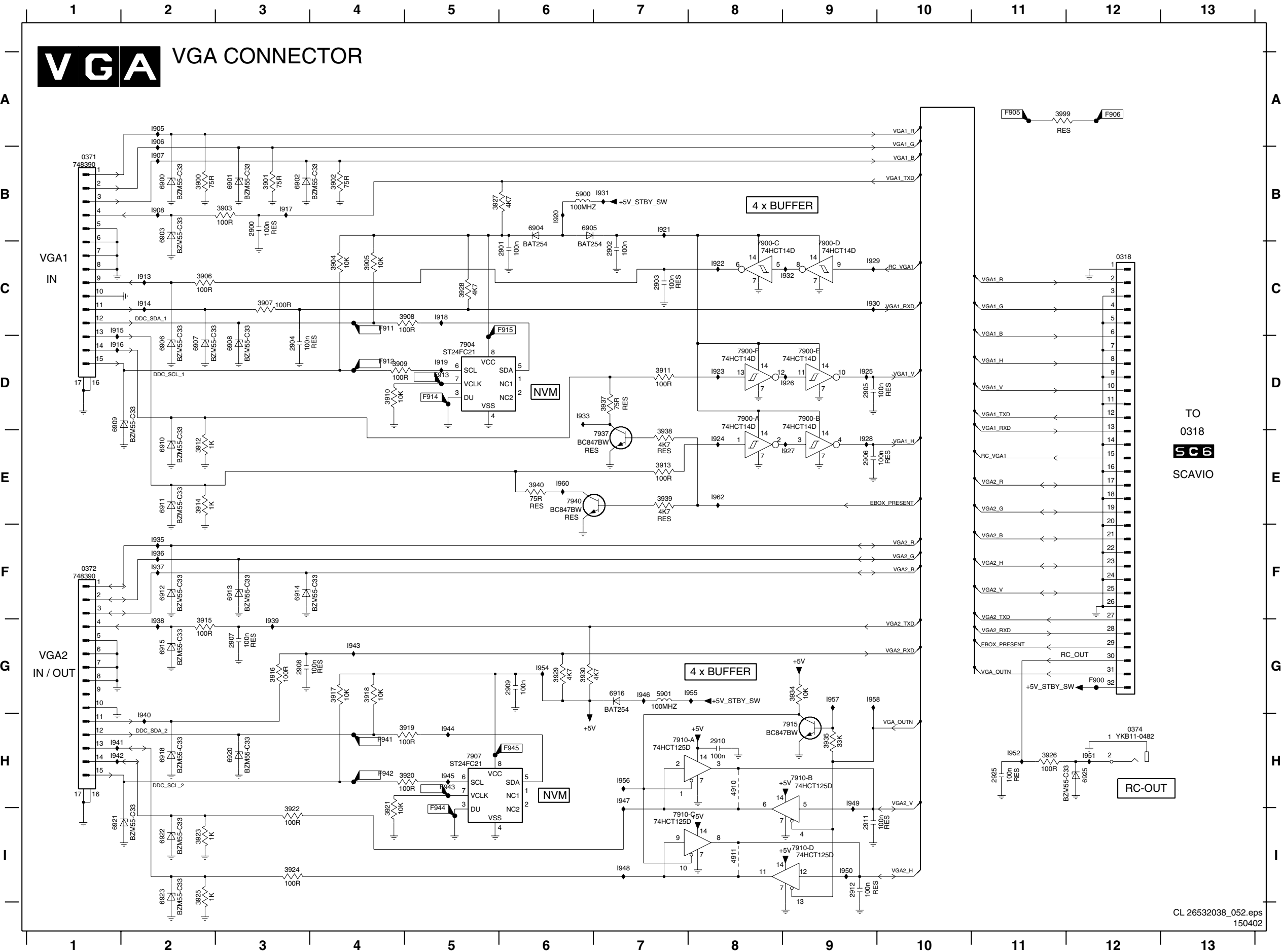
6

7

8

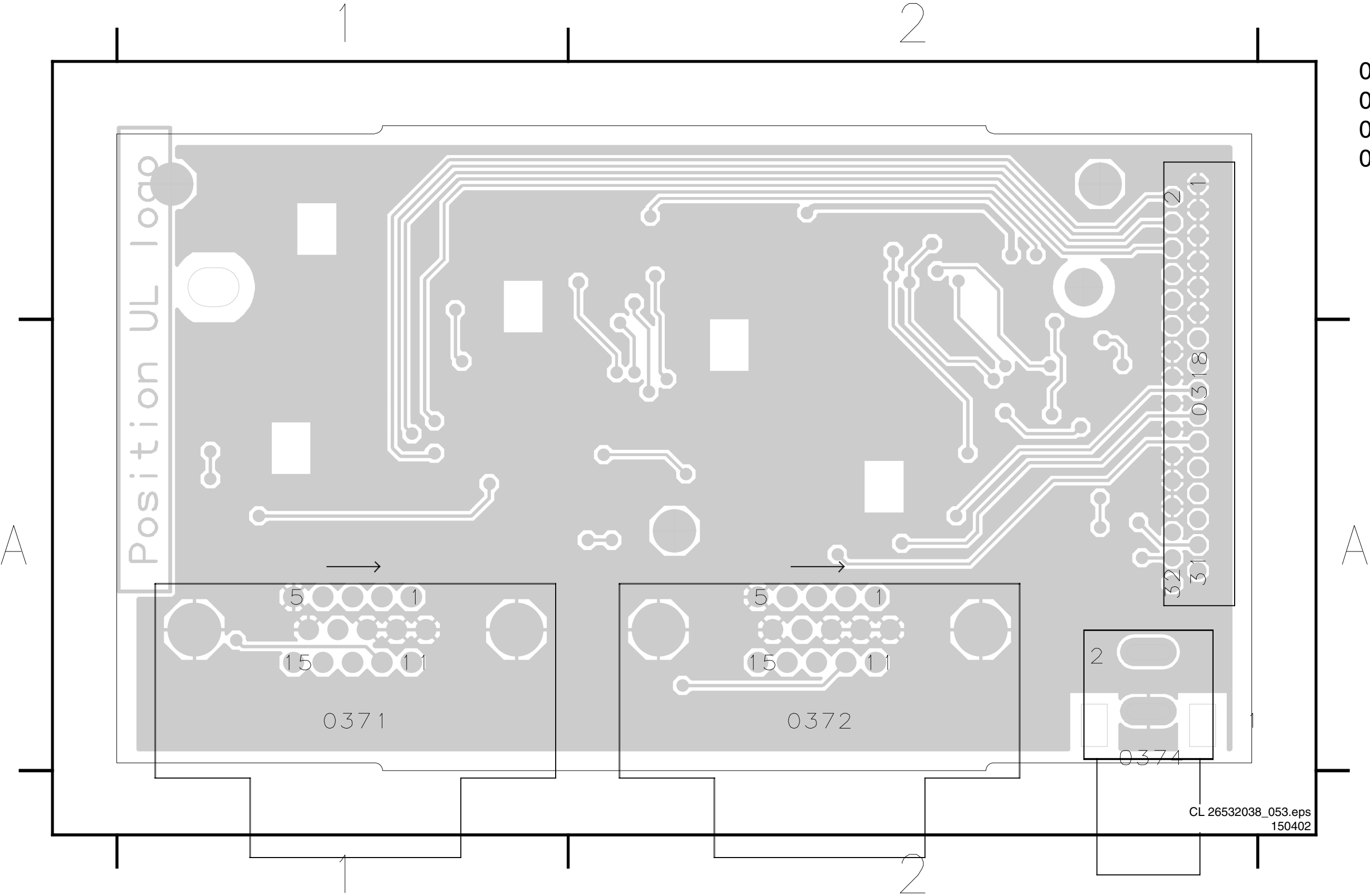
CL 26532038_51d.eps
020402

VGA Connector Panel



0318	C13	I908	B2
0371	B1	I913	C2
0372	F1	I914	C2
0374	H13	I915	C1
2900	B3	I916	D1
2901	C6	I917	B3
2902	C7	I918	C5
2903	C7	I919	D5
2904	D3	I920	B6
2905	D9	I921	B7
2906	E9	I922	C8
2907	G3	I923	D8
2908	G3	I924	E8
2909	G6	I925	D9
2910	H8	I926	D9
2911	I9	I927	E9
2912	I9	I928	E9
2925	H11	I929	C9
3900	B2	I930	C9
3901	B3	I931	B7
3902	B4	I932	C9
3903	B3	I933	D6
3904	C4	I935	F2
3905	C4	I936	F2
3906	C2	I937	F2
3907	C3	I938	G2
3908	C5	I939	G3
3909	D5	I940	H2
3910	D5	I941	H1
3911	D7	I942	H1
3912	E2	I943	G4
3913	E7	I944	H5
3914	E2	I945	H5
3915	G2	I946	G7
3916	G3	I947	H6
3917	G4	I948	I6
3918	G4	I949	H9
3919	H5	I950	I9
3920	H5	I951	H12
3921	I5	I952	H12
3922	I3	I954	G6
3923	I2	I955	G8
3924	I3	I956	H7
3925	I2	I957	G9
3926	H12	I958	G9
3927	B5	I960	E6
3928	C5	I962	E8
3929	G6		
3930	G6		
3934	G9		
3935	H9		
3937	D6		
3938	E7		
3939	E7		
3940	E6		
3999	A12		
4910	H8		
4911	I8		
5900	B6		
5901	G7		
6900	B2		
6901	B3		
6902	B3		
6903	B2		
6904	B6		
6905	B6		
6906	D2		
6907	D2		
6908	D3		
6909	D1		
6910	E2		
6911	E2		
6912	F2		
6913	F3		
6914	F3		
6915	G2		
6916	G7		
6918	H2		
6920	H3		
6921	I1		
6922	I2		
6923	I2		
6925	H12		
7900-A	D8		
7900-B	D9		
7900-C	C8		
7900-D	C9		
7900-E	D9		
7900-F	D8		
7904	D5		
7907	H5		
7910-A	H7		
7910-B	H9		
7910-C	I7		
7910-D	I9		
7915	H9		
7937	E6		
7940	E6		
F900	G12		
F905	A11		
F906	A12		
F911	C4		
F912	D4		
F913	D5		
F914	D5		
F915	D5		
F941	H4		
F942	H4		
F943	H5		
F944	I5		
F945	H5		
I905	A2		
I906	A2		
I907	B2		

Layout VGA Connector Panel (Top View)



0318 A2
0371 A1
0372 A2
0374 A2

1



8. Alignments

Index of this chapter:

1. General Alignment Conditions
2. Hardware Alignments
3. Software Alignments and Settings

Note: The Service Default Mode (SDM) and Service Alignment Mode (SAM) are described in chapter 5. Menu navigation is done with the 'CURSOR UP, DOWN, LEFT or RIGHT' keys of the remote control transmitter.

8.1 General Alignment Conditions

Perform all electrical adjustments under the following conditions:

- Mains voltage and frequency: 220 V_{AC} / 50 Hz unless otherwise stated.
- Connect the set to the Mains via an isolation transformer.
- Allow the set to warm up for approximately 20 minutes.
- Measure the voltages and waveforms in relation to chassis ground (with the exception of the voltages on the primary side of the power supply). Never use the cooling fins/plates as ground.
- Test probe: R_i > 10 MΩ, C_i < 2.5 pF.
- Use an isolated trimmer/screwdriver to perform the alignments.

Use a VGA-generator or a Personal Computer (contact your National Service Organisation for the necessary test pattern files) as test pattern generator and connect it to the VGA1 input of the FM23 plasma monitor. When you use a PC, start Microsoft PowerPoint (or Paintbrush), and load the mentioned file. Then display the picture as full screen.

8.2 Hardware Alignments

After a Power Supply (only valid for version 3, see also table in paragraph 8.3.6) replacement, you must align both V_S and V_A voltages. The exact values differ from panel to panel, therefore a sticker with the correct values is placed on the PDP.

1. Replace the Power Supply panel (see chapter 4).
2. Set the monitor in Service Default Mode (see SM chapter 5.3.1).
3. Allow the set to warm up for 20 minutes.

Use a calibrated volt meter (accuracy = ± 1%) for the following alignments.

For the correct alignment values, check the sticker in the upper left corner of the PDP (located just behind the suspension bracket, see photo below).



Figure 8-1 V_S/V_A alignment values (example)

8.2.1 V_S Alignment

Measure V_S on pin 10 of connector 0323 (diagram P7). Use potmeter R3026 (see diagram P6) to align this voltage to the value mentioned on the sticker (**mind you:** alignment accuracy = ± 0.5 %).

8.2.2 V_A Alignment

Measure V_A on pin 1 of connector 0323 (diagram P7). Use potmeter R3127 (see diagram P7) to align this voltage to the value mentioned on the sticker (**mind you:** alignment accuracy = ± 0.5 %).

8.3 Software Alignments

Enter the Service Alignment Mode (see chapter 5). The SAM menu will now appear on the screen.

Select one of the following alignment menus via the upper horizontal bar:

1. General (Gen.)
2. Display (Disp.)
3. Scaler (Scal.)
4. Video 1 (Vid.1)
5. Video 2 (Vid.2)
6. Options (Opt.)

Note: the last three items are not available in the *Basic* configuration.

8.3.1 General

Table 8-1 SAM Menu 'Gen.'

Service Alignment Menu	General
Type nr. - AG Code	32FD9944/01S (example)
SW version OTC	AAAABC-X.Y xxxxx
SW version PW	AAAABC-X.Y xxxxx
SW version EPLD	AAAABC-X.Y xxxxx
Errors 1	xx xx xx xx xx
Errors 2	xx xx xx xx xx
Operational hours	xx
Reset error buffer	Press OK to reset
Store	Press OK to store

Store

Select this item, and press OK, to store the made alignments.

Note: There are several methods to exit the SAM, each with its own characteristics:

- Switch the set 'off' (with the Mains switch or by pulling the Mains cord); new alignment settings are **always** stored, even when item 'store' was not activated!
- Switch the set to 'standby' by pressing the power button on the remote control transmitter; new alignment settings are **always** stored, even when item 'store' was not activated!
- Use a standard RC-transmitter and key in the code **0 0**; new alignment settings are **not** stored (except when item 'store' was activated)!

8.3.2 Display

Table 8-2 SAM Menu 'Disp.'

Service Alignment Menu	Display
Test pattern	On / Off
Contrast	Adjust ...
Gamma	Adjust ...
White point	Adjust ...
Compensation fact.	0 <----- -----> 255
	128

Test pattern

Possible to generate an 'even white' test pattern, which is generated by the PDP. You can use this picture, to check the plasma display for pixel defects.

Contrast

Not necessary to align, fixed value is 255.

Gamma

Not necessary to align, fixed value is 2.

White point

Not necessary to align, unless stated by the NSO. Fixed value is 255.

Compensation factor

Not necessary to change. Fixed value is 128. In some cases however, a new software table must be loaded in the PW Scaler (via ComPair). The following service scenarios are possible:

- **When a defective glass filter plate is replaced:** This requires a new 'White Point' adjustment (see next paragraph).
- **When a defective PDP is replaced by the same type:** This requires a new 'White Point' adjustment (see next paragraph).
- **When a defective PDP is replaced by another (newer) type:** This requires both a new compensation table upload (by ComPair), and a new 'White Point' adjustment (see next paragraph). **Note:** The loaded software, performs the settings automatically.

8.3.3 Scaler

Table 8-3 SAM Menu 'Scal.'

Service Alignment Menu	Scaler
Test pattern	On / Off
Color temperature	6500K / 7600K / 10000K
White point	Adjust ...
Align ADC	Press OK to execute

Test pattern

This function makes it possible to generate a 'colour bar' test pattern (generated by the PW Scaler IC). You can use this picture, to check the video path, starting at the PW Scaler IC to the plasma display.

Colour temperature

Select the appropriate colour temperature for the alignments (see also 'White point' adjustment below).

White Point

Table 8-4 SAM Menu 'Scaler - White Point'

Service Alignment Menu	Scaler - White point
White point red	<----- -----> 125
White point green	<----- -----> 100
White point blue	<----- -----> 110
Press OK when done	

Method 1 (with colour analyser)

1. Supply, via an external VGA source (e.g. a PC with 1024x768 mode, or a VGA generator), a '**White Drive**' test pattern (ask your NSO). This picture consists of black picture with in the middle a 100% white square.
2. Set BRIGHTNESS to '53' and CONTRAST to '65' (via the standard customer menu).
3. Go to the SAM menu.
4. Set COLOR TEMPERATURE to '7600 K'.
5. Measure with a CTV colour analyser (calibrated with the spectra) on the centre of the white square on the screen.
6. Select 'White point' in the SAM Scaler menu, and press CURSOR RIGHT.
7. Adjust with the CURSOR UP/DOWN or LEFT/RIGHT command, the three white points Red, Green and Blue to '128' (do **not** go above this value!), and align with one or two of the drivers to the correct coordinates (see table).
8. Repeat the same measurement for respectively colour temperature '6500 K' and '10000 K'.
9. Repeat again if necessary.

Table 8-5 White Point XY-coordinates

Colour Temperature	x	y
5600 K (Cool)	313	329
7600 K (Normal)	299	309
10000 K (Warm)	280	289

Method 2 (without colour analyser)

Without a CTV colour analyser, it is possible to set some parameters, which are based on average values from production.

Table 8-6 White point RGB-values

Colour Temperature	R	G	B
5600 K (Cool)	120	119	128
7600 K (Normal)	128	121	121
10000 K (Warm)	128	120	110

Align ADC

1. Supply, via an external VGA source (e.g. a PC, mode 1024x768), the '**ADC alignment**' test pattern (ask your NSO). This picture consists of a half black and half white picture: black is 16, and white is 235 on a full scale of 255 (=770 mV).
2. Go to the SAM menu.
3. Select 'Align ADC' in the SAM Scaler menu, and press CURSOR RIGHT.
4. The alignment is performed automatically.

8.3.4 Video 1 (Enhanced version only)

Table 8-7 SAM Menu 'Vid. 1'

Service Alignment Menu	Video 1
Test pattern	On / Off
Brightness	0 <----- ----- > 255
Contrast	0 <----- ----- > 255
Sharpness	0 <----- ----- > 255

Test pattern

This function makes it possible to generate a 'full white' test pattern (generated by the de-interlacer SDA9400, item 7280). You can use this picture, to check the video path of the external inputs AV1, 2 and 3, starting at item 7280 (the proper functioning of the Digital Video Decoder SAA7118 is not tested!).

Note: To generate the test pattern, it is necessary to feed a signal to one of the AV-inputs.

Brightness

This is the setting of IC7225 (SAA7118). Not necessary to align, fixed value is:

- PAL/SECAM: 132
- NTSC: 139

Contrast

This is the setting of IC7225 (SAA7118). Not necessary to align, fixed value is:

- PAL/SECAM: 139
- NTSC: 128

Sharpness

Not necessary to align, fixed value is 6.

8.3.5 Video 2 (Enhanced version only)

Table 8-8 SAM Menu 'Vid. 2'

Service Alignment Menu	Video 2
Lum. delay PAL	0 <----- ----- > 7
Lum. delay SECAM	0 <----- ----- > 7
Lum. delay NTSC	0 <----- ----- > 7

With the 'Luminance delays' alignment, you can place the luminance information on the chrominance information (push brightness onto the colour). Use a colour bar/grey scale pattern as test signal.

These values are normally fixed.

Lum. delay PAL

Apply a PAL colour bar/grey scale pattern as a test signal.

Adjust value until the transients of the colour part and black and white part of the test pattern are at the same position. Fixed value is 4.

Lum. delay SECAM

Apply a SECAM colour bar/grey scale pattern as a test signal. Adjust value until the transients of the colour part and black and white part of the test pattern are at the same position. Fixed value is 4.

Lum. delay NTSC

Apply a NTSC colour bar/grey scale pattern as a test signal. Adjust value until the transients of the colour and black & white part of the test area are at the same position. Fixed value is 4.

8.3.6 Options (Enhanced version only)

Table 8-9 SAM Menu 'Opt.'

Service Alignment Menu	Options
V _s /V _a control	On / Off
Display size	32" / 42"
Virgin	On / Off
ICONN control	On / Off

Vs/Va control

When this option is set to 'on', it will enable the 'PDP feedback loop' for the **automatic** Vs/Va alignment. See table below for the correct setting.

Table 8-10 Vs/Va Control options

	PSU version 3	PSU v.3 with precision R's	PSU version 4
PDP with Vs feed-back(-52 PDP)	Feedback loop 'OFF', alignment is necessary.	Feedback loop 'ON', but alignment (check) is necessary (see par. 8.2 for values) .	Feedback loop 'ON', no alignment necessary.
PDP with Vs/Va feed-back(with 'B' in serial number)	Feedback loop 'OFF', alignment is necessary.	Feedback loop 'ON', no alignment (check) necessary.	Feedback loop 'ON', no alignment necessary.

Display size

Fixed value is 32". This option is only meant for the factory, to indicate the display size for the software.

Virgin

Normally 'off'. When this option is set to 'on', the display starts with the language selection menu.

ICONN control

Normally 'off'. Set this option to 'on' in case a so-called 'ICONN'-box (for Hotel TV) is connected to the display.

Caution: When this option is set to 'on', **without an ICONN-Box** connected to the monitor, one cannot control the monitor anymore (because the RC connection is interrupted).

There are two ways to restore the remote control again:

- connect pin 8 (IR_TX) to pin 9 (IR_RX) on the RS232 connector of the monitor (the easiest way to do this, is to make a 'dummy' connector with these pins connected, and plug this into the monitor). or
- Set the set in the Service Alignment Mode (SAM) **via shorting jumpers 1 and 2 of connector 0382** on the SCAVIO panel.
After this you can enter the appropriate menu to set 'ICONN control' to 'off' again.

9. Circuit Descriptions and List of Abbreviations

Index of this chapter:

1. General
2. Power Supply unit
3. VGA connector panel
4. SCAVIO panel
5. Audio Amplifier panel
6. LED/Switch panel
7. Plasma Display Panel
8. Abbreviations
9. IC Block diagrams

Notes:

- Figures can deviate slightly from the actual situation, due to different set executions.
- For a good understanding of the following circuit descriptions, please use the diagrams in chapter 6 and 7. Where necessary, you will find a separate drawing for clarification.

- A new SCAVIO panel, which takes over the tasks of the former AVC and LIMESCO panels.
 - A new class-D audio amplifier,
 - A new, improved 32" PDP (with new ALiS technology).
- It is possible to use this product as stand-alone monitor or, in combination with the so-called F21RE Receiver box, for TV applications.

There are two configurations:

- Basic:** which has one video input (VGA1) and one video output (VGA2). The VGA2 video output is directly connected to the VGA1 video input, without any processing. The audio output of VGA2 is also directly connected to the VGA1 audio input.
- Enhanced:** which has six video inputs (VGA1, VGA2, DVI-D, CVBS, YC and HD) and six corresponding audio inputs. These inputs are internally converted to the appropriate signals. The VGA2 connection is here bi-directional (Flex-VGA).

9.1 General

The FM23 is the 3rd generation Philips plasma monitors. In comparison to the FTV1.9DE, it has:

- A power supply that is based on the FTV1.9,

Note: In all descriptions below, the *Enhanced* version of the FM23 is discussed. When there are important differences between the *Basic* and *Enhanced* versions, this is mentioned.

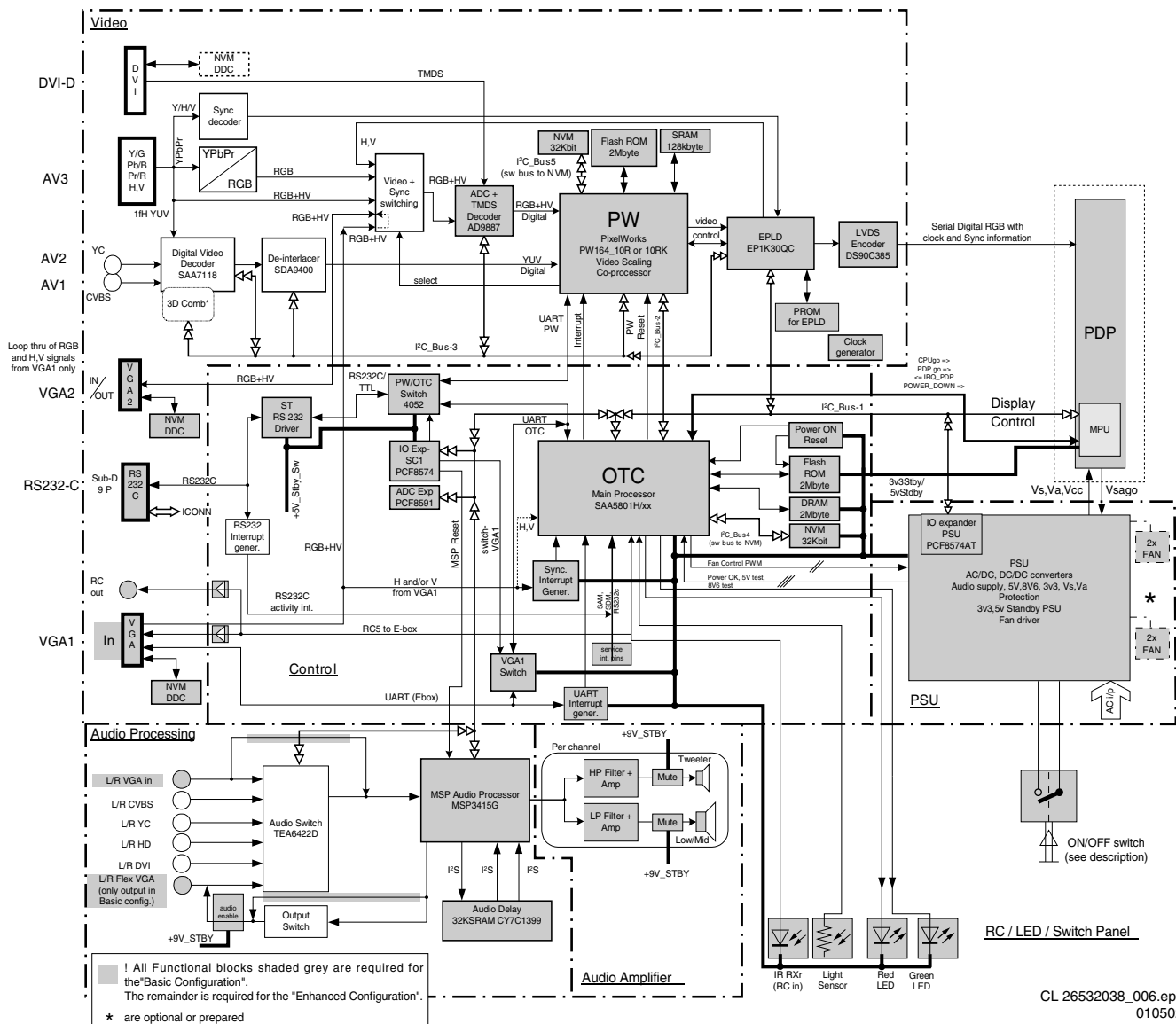


Figure 9-1 Control and Data Path

9.1.1 Input/Output

The main inputs are:

- **Basic:** VGA only,
- **Enhanced:** VGA, Flex-VGA, DVI-D, HD-RGB+HV, HD-2fH-YPbPr (sync on Y), 1fH-YCbCr (sync on Y), YC, CVBS on cinch. Flex-VGA gives the user a choice to configure the 'loop-through VGA output' as an output or as input.

9.1.2 Video

This mainly consists of an analogue processing part and a digital processing part. The video inputs like VGA (*Basic* configuration), CVBS, YC, HD-RGB/YUV (1fH and 2fH) and DVI-D are received and processed.

The VGA signals are first converted to digital signals and then processed by the PW Scaler.

The YPbPr (2fH) signal is discretely converted to RGB, whereas the YCbCr (1fH) signal is processed in the SAA7118 Digital Video decoder.

The base-band video inputs (CVBS and YC) are output from this decoder as digital YUV, which are then further processed by the Pixel Works Scaler (PW).

The signals on the digital DVI input are first decoded by the TMDS decoder inside the AD9887 and then processed by the PW Scaler.

The PW Scaler output is going through an EPLD and then via an LVDS Encoder to the Fujitsu/Hitachi PDP (Plasma Display Panel) as differential serial data. This PDP is based on ALiS (Alternate Lighting of Surface) technology and is an interlaced display, with separate odd and even fields to be displayed.

9.1.5 Power Supply

9.1.3 Audio

This mainly hosts the audio inputs for the various video inputs. They go through an I²C controlled source selector. The main audio processing is done by the Micronas MSP3415G version with built-in UltraBass-II algorithm.

A digital delay line is created using the I²S channel and SRAM. The delay created can be selected between two values, one for the Receiver box, and one for the Monitor.

The processed audio signals are then differentially transmitted to the audio amplifier panel. This amplifier drives a tweeter and a twin-drive woofer (low/mid range). Active filtering is done prior to the amplifiers.

9.1.4 Control

The main controller is the OTC, referred to as the 'main processor'. This operates in co-ordination with the processor in the Pixel Works Scaler (PW), referred to as the 'co-processor'.

When the FM23 monitor is connected to an F21RE Receiver box, the UART commands from the Receiver box will control the monitor.

In stand-alone mode, the monitor can be controlled via the Remote Control or via the RS232C port.

DDC1/2B (Digital Data Channel, an I²C-based protocol) is implemented with separate identification NVMs for the two VGA inputs and the DVI-D input as well. In addition, the RS232C port can be used for software download to the PW and the OTC. The target for downloading is controlled via a switch in the RS232C path; the switch itself is controlled by the OTC.

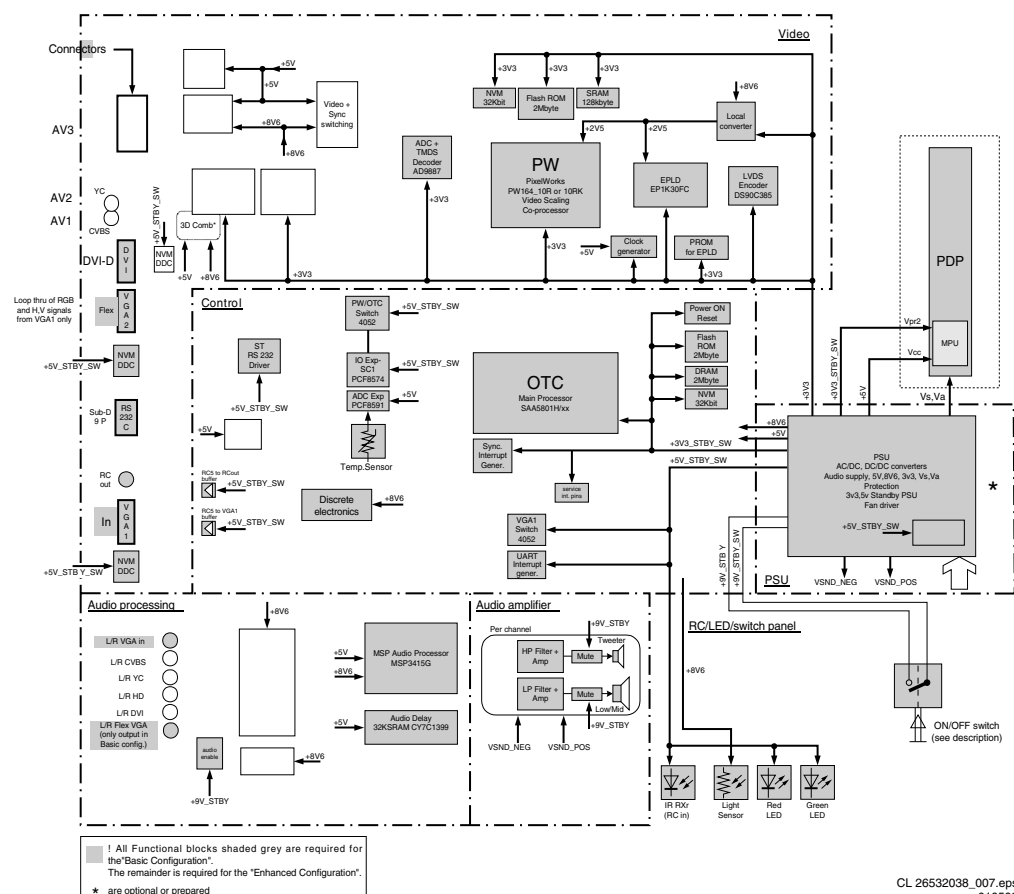


Figure 9-2 Power Supply Path

The PSU consists of a pre-conditioner part and a DC/DC converter part. This converter supplies power to the PDP high voltages, the auxiliary voltages, and the audio amplifier. There is a separate standby power supply, which supplies the Main Processor, PDP microcontroller, interrupt generator and some other circuits.

The mains inlet module will host the inlet and filtering.

There is a functional 'Mains on/off' switch on the LED panel. This switch is on the secondary side, controlling the relays on the primary side.

9.2 Power Supply Unit (Diagrams P)

9.2.1 Introduction

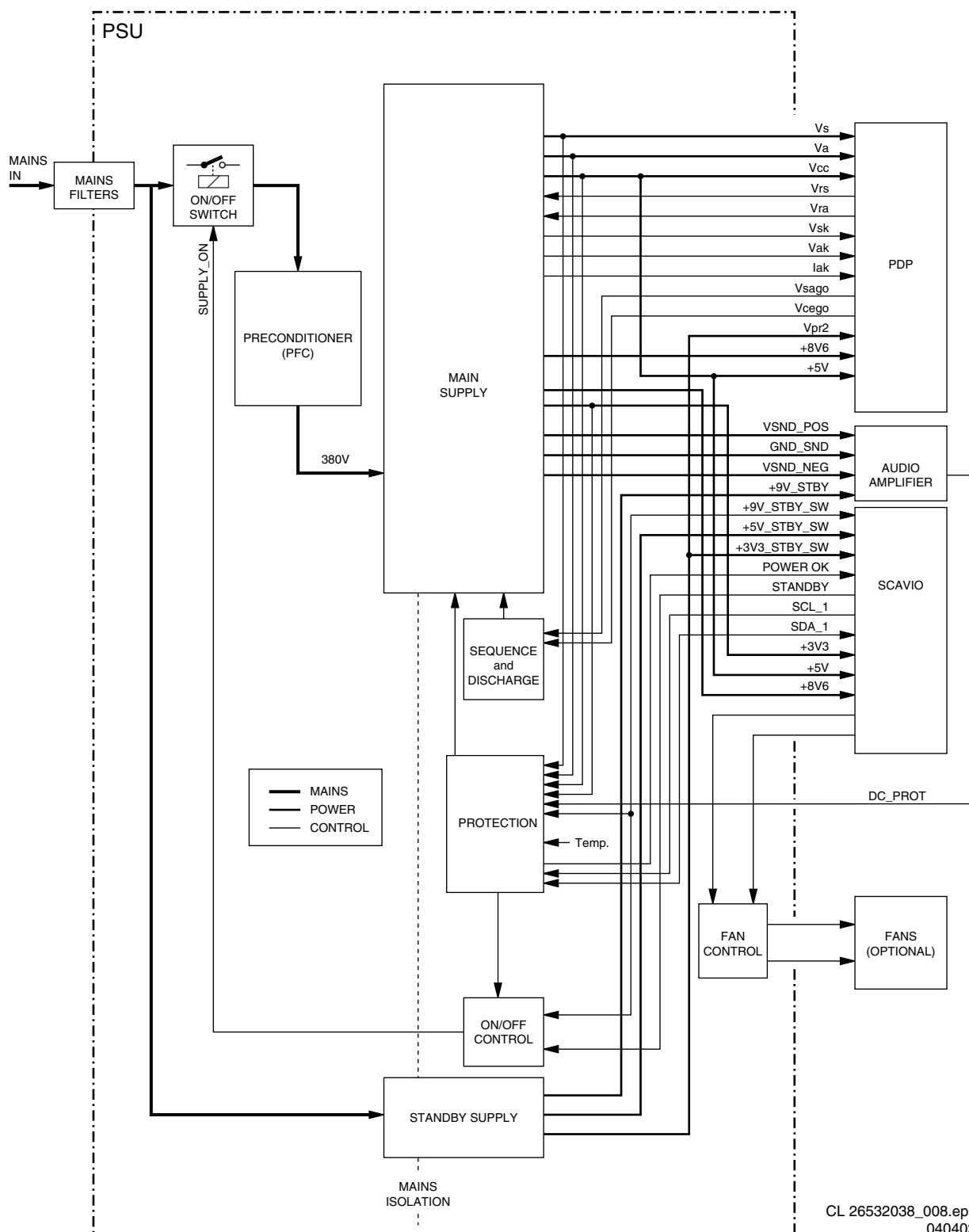


Figure 9-3 Power Supply

Table 9-1 I/O Overview Power Supply

Name	I/O	Value	Description
+3V3	Out	+3.3 Vdc	To supply small signal digital circuitry.
+3V3_STBY_SW	Out	+3.3 Vdc	To supply small signal digital circuitry, needing power in standby
+5V	Out	+5 Vdc	To supply small signal digital circuitry.
+5V_STBY_SW	Out	+5 Vdc	To supply small signal digital circuitry, needing power in standby
+8V6	Out	+8.6 Vdc	To supply the small signal analogue circuitry.
+9V_STBY	Out	+9 Vdc	Signal to functional ON/OFF switch.
+9V_STBY_SW	Out	+9 Vdc	Signal from functional ON/OFF switch.
DC_PROT	In	H/L	Signal from audio amplifier to switch OFF the power supply in case of a safety problem.
FAN_SP_1	In	H/L (TTL level)	PWM signal from uP to control optional fans (group 1).
FAN_SP_2	In	H/L (TTL level)	PWM signal from uP to control optional fans (group 2).
FAN_SUPPLY_1	Out	5 to 13 Vdc	Supply voltage for optional fans (group 1).
FAN_SUPPLY_2	Out	5 to 13 Vdc	Supply voltage for optional fans (group 2).
Iak	Out		Signal to measure 'Ia' in PDP ($I_{ak} = 1 \times I_a$).
Mains	In	110/240 Vac, 50/60 Hz	Mains voltage.
POWER_OK	Out	H/L (TTL level)	Signal to an interrupt pin of the uP, which indicates that the power supply is in regulation. If an error occurs, signal goes from H to L.
SCL_1	In	H/L	I2C clock line from uP.
SDA_1	In/ Out	H/L	Bi-directional I2C data line from/to uP.
STANDBY	In	H/L (TTL level)	Signal to switch the PSU to standby mode.
Va	Out	+30 to +70 Vdc	To supply the addressing circuitry in the PDP.
Vak	Out		Signal to measure Va in PDP ($V_{sk} = 0.036 \times V_a$).
Vcc	Out	+5 Vdc	To supply small signal digital circuitry in the PDP.
Vcego	In	H/L ($H = +2$ Vdc)	Signal to switch the low voltage supplies ON/OFF.
Vra	In		Signal to control Va ($V_a = 30 + (20 \times V_{ra})$).
Vrs	In		Signal to control Vs ($V_s = 70 + (10 \times V_{rs})$).
Vs	Out	+70 to +90 Vdc	To supply the sustain circuitry in the PDP.
Vsago	In	H/L ($H = +2$ Vdc)	Signal to switch the high voltage supplies (Vs and Va) ON/OFF.
Vsk	Out		Signal to measure Vs in PDP ($V_{sk} = 0.029 \times V_s$).
VSND_POS	Out	+14.5 Vdc	To supply the audio amplifier panel.
VSND_NEG	Out	-14.5 Vdc	To supply the audio amplifier panel.

9.2.2 Mains Inlet and Filter (Diagram P2)

The Power Supply Unit (PSU) is designed to provide regulated output voltages for the plasma display panel (PDP) and the built-in electronic panels (such as e.g. the SCAVIO and Audio Amplifier panels).

It will house the Pre-conditioner, DC/DC converters and the Standby circuitry. In addition, this panel will house the protection and the (optional) fan drive circuitry.

The Mains inlet is mounted alongside the SCAVIO panel. It consists of the necessary high and low frequency mains filters.

The mains AC voltage is applied to the input filter and then fed to the standby supply. This supply is always operational and delivers the +9V_{STBY} voltage.

The task of the main supply is to deliver the supply voltages for the several electrical circuits in the monitor.

It is switched via two single-pole relays, which are powered from the +9V_{STBY} voltage and controlled via the SUPPLY_ON signal.

The reason to choose for a separate standby supply instead of a single flyback supply is the requirement to have a low standby power consumption.

The PSU consists of the following parts (which are described separately):

- Mains inlet and filter,
- Standby supply,
- Fan control (optional),
- Pre-conditioner,
- LLC supply,
- Aux. supply,
- Protections.

To understand the descriptions below, see also mentioned diagrams in Chapter 7.

Introduction

The mains filter provides common-mode and differential-mode filtering, to fulfil legal and self-imposed limits. Additional provisions are mains spikes and lightning protection.

Operation

The mains voltage is provided via mains inlet 0308, after which it is fused by a T6.3A fuse (item 1400).

The next part, the mains filter, is optional. It consists of an LC common mode filter section. This filter consists of two capacitors (items 2402 and 2403) from both phase and neutral to ground (to reduce the leakage current) and an inductor (5401). Interferences on one of the phases are shorted to ground via these capacitors.

Inductor 5401 also provides a differential-mode filtering with capacitor 2400. Resistor 3401 discharges this capacitor after the mains is disconnected.

A second common mode filter is made around coil 5402 and capacitor 2401.

Resistor 3400 is a high energy VDR. The advantage of this VDR is that it can handle 400 V_{AC} without risk of fire. At high voltage peaks (e.g. lightning surge) on one of the phases, the resistance of VDR 3400 will be very low, causing fuse 1400 to interrupt.

At a lightning surge on both phases with respect to chassis ground, mains filter 5401 will form a high resistance, through which the voltage will rise very sharply.

To prevent flashovers, a spark-gap/ resistor combination (items 1402 and 3404) is implemented.

The high-ohmic resistors 3402 and 3403 are connected between neutral and chassis ground. They are required by safety regulations.

9.2.3 Standby Supply (Diagram P2)

Introduction

The standby supply is a separate power supply, meant to reduce power consumption of the Flat TV monitor in standby mode. The standby supply operates on the AC voltage from the input filter part, and has to deliver a stable 9 V voltage.

It has three **mains isolated** outputs, and one **'hot'** output:

- **+9VSTBY** (called +9VSTBY_SW after the 'on/off' switch 1101), to power the 'on/off' relays in the pre-conditioner.
- **+5VSTBY_SW** (derived from the +9V_{STBY} via voltage regulator 7540)
- **+3V3STBY_SW**, to supply the μ P of the PDP.
- **25V_HOT**, to supply the LLC controller.

The standby supply is also connected to the pre-conditioner output (400V_HOT), in order to deliver a voltage as long as possible, after switch 'off' and at mains dips.

Operation

The standby supply is always operational when the AC input voltage is present, so even when the POWER switch is in the 'off' position. After a small rectifier (D6512/6513) and buffer capacitor (C2503), the DC voltage is applied to an SMPS (switched mode power supply).

The SMPS itself is build around IC7500, a 'TINYSwitch TNY256'. This IC contains a control circuitry and a power MOSFET. It uses a simple 'on/off' control loop to regulate the output voltage. The generated +9V_{STBY} voltage, at the secondary side, is rectified by D6504 and smoothed by C2508. The supply for the TNY256 on pin 6 comes via resistor R3506 and L5500.

By using secondary sensing, a very accurate standby voltage and high efficiency is achieved. The sensing circuit uses a TL431 as reference voltage/error amplifier. Optocoupler 7501 is used for the mains isolation.

When the output voltage rises, the reference voltage on the TL431 will exceed 2.5 V and the current through this device and the optocoupler LED will increase. By this, the optocoupler transistor will conduct more. When this current (at pin 4 of IC7500) exceeds 50 μ A, the MOSFET is switched 'off', and the output voltage will drop. When this current drops below 40 μ A, the MOSFET is switched 'on' again.

During the time that the MOSFET is 'on', the IC has no supply voltage. To overcome this period, the energy stored in the bypass capacitor C2513 is used. This capacitor is charged during the time the MOSFET is 'on'.

As the TNY256 is sensitive for transients (mains spikes), a 'peak clamp' circuit (300 V zenerdiodes 6501 and 6502) is used to limit the voltage to a safe level.

9.2.4 Fan Control (Optional, Diagram P4)

For ceiling mount or portrait-mode use, there is foreseen in four optional fans, grouped per two. The temperature within the monitor is measured via a sensor (R3372, KTY81) on the PSU. This sensor is, via A/D converter (item 7530 on the SCAVIO), connected to the OTC. According the temperature within the cabinet, the OTC-software will drive the two PWM outputs of the OTC. These outputs (FAN_SP_1 and 2) are connected to the PSU, where for each signal, a corresponding voltage is generated to supply the fans. These voltages (FAN_SUPPLY_1 and _2) are proportional to the duty cycle of the corresponding PWM signals.

The OTC senses the temperature every 5 s. If it has reached T-alarm, and this value has been measured three times consequently, the monitor will go into protection, and a error-code is generated.

9.2.5 Pre-conditioner (Diagram P5)

Warning: the pre-conditioner does **not** provide mains isolation.

Introduction

The European Law describes a reduction of mains harmonics for apparatus with a power consumption above 75 W.

Therefore the pre-conditioner is designed. This module serves as the interface between the mains input and the V_S/V_A supply. The advantage of a pre-conditioner is (compared to a mains input filter):

- Reduction of mains harmonics to legal limits.
- Lower mains current for the same output power.
- Power factor close to 1.
- Stable regulated output.
- Small and low weight.

The input voltage of the pre-conditioner is universal, between 95 and 264 V_{AC}. The output is 400 V_{DC} (400V_HOT) with a maximum output power of 300 W. This output voltage is delivered to the V_S supply.

Operation

Start-up

The two relays (1450 and 1460, diagram P2) are controlled via the SUPPLY_ON signal. This signal will become 'high' when the +9V_STBY_SW, the STANDBY (from the OTC), and the LATCH signal are 'ok'. It then switches indirect relay 1450 via transistor 7460 and so enables the use of a small low voltage switch.

To protect rectifier 6600 and relay 1450, the inrush current is limited to a maximum of 20 A by charging the capacitor 2605 through two serial PTCs (3450 and 3451) and an NTC (3452). After approximately 0.5 sec, relay 1460 is activated. This relay will short the PTCs. The advantage of using an NTC, is the fact that the resistance varies with the current and hence the mains voltage. At a high mains voltage, the current is lower for the same power.

Two clamp diodes 6605 and 6606 charge output capacitors C2616 to the peak voltage of the mains input. During normal operation, both diodes are blocked because of the output voltage of 400 V_{DC}, and will only conduct if there is a mains spike or an output dip.

Capacitor 2616 delivers via R3668 the start-up voltage at pin 16 of IC7650. After the start-up cycle, IC7650 is supplied via auxiliary winding 1-2. Capacitor C2663 is charged during the cycle that MOSFET 7610 conducts. While MOSFET 7610 is switched 'off', this capacitor transfers its energy via D6661 to the input of stabiliser IC7660. The 15 V output voltage of this IC is fed via D6665 to V_{CC} pin 12 of IC7650.

The slow start function is realised by the circuit consisting of transistor 7654, D6654, R3654, and C2654.

Normal Operation

An up-converter circuit is used for the pre-conditioner. The switching frequency of the converter is chosen much higher than the mains frequency. It is therefore possible to consider the supply as constant, during every high frequency period, and the envelope of all voltage steps during the low frequency period approximates a half sine wave.

The output voltage of the pre-conditioner equals the input voltage, when the MOSFET is continuous switched 'off', and increases while the MOSFET is switched 'on'.

The rectified mains input voltage is connected to pin 5 of IC7650 via voltage divider R3650 and R3651. This voltage is proportional with the mains input, and is used to change the duty cycle of the pulses, which are generated at pin 11. Because the width of these pulses is not small enough, the circuit around transistors 7640 and 7641 is added. It decreases

the duration of the square wave by 500 ns (this value is set by R3640 and C2640).

A demagnetisation winding (pin 1-2 of L5600) detects when there is no energy in the transformer. This information is fed to IC7650 pin 7 and this is used to switch 'on' the MOSFET (7610). In this way, the dissipation is very low, combined with a low EMI.

The MOSFET 7610 is switched 'off' at high currents, up to 15 A. To reduce dissipation, this is done at high speed for which 'turn off driver' T7608 is used.

The output voltage (400 V) is divided by R3670 and R3671 and connected to pin 3 of IC7650. A change in the load will adjust the duty cycle of the gate pulse at pin 11, in order to keep the output voltage constant. Therefore, there is no need to adjust the output voltage by means of a potentiometer.

Protections

Current Protection

The current through FET 7610 flows also through the sense resistors 3614 and 3615. The voltage across these resistors is fed to pin 6 of IC7650. If the current exceeds its reference level, the pre-conditioner will switch 'off'. A filter, formed by C2666 and R3666, avoids unnecessary protection triggering due to spikes.

C2665 and R3665 on pin 13 determine the maximum oscillating frequency.

9.2.6 LLC Supply (Diagram P6)

Introduction

The V_S supply (70 - 90 V) is based upon the so-called LLC converter technology (also used in the MG3.1 and FTV1.9). It is used to supply the power of the sustain pulses, which generate the light in the PDP. The voltage is set by a reference DC voltage (V_{RS}), coming from the PDP.

The V_A voltage (derived from V_S , 30 - 70 V) is used to supply the power for driving the addressing electrodes of the PDP.

The value of V_A is also depending on a reference voltage (V_{RA}) coming from the PDP.

The main supply hosts the following supplies:

- V_S supply, via an LLC converter.
- V_A supply, derived from V_S via a down converter.
- V_{CC} , via a flyback converter.
- 3V3, via a down converter.
- Audio amplifier supplies (V_{SND_POS} and V_{SND_NEG}), via a transformer.

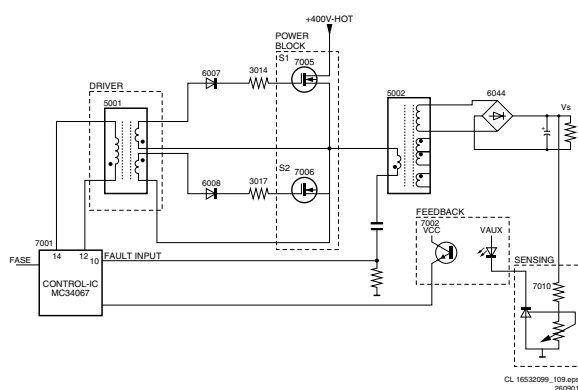


Figure 9-4 V_S Supply

The start-up voltage for the IC is derived from one phase, the IC starts to oscillate, and alternately S1 and S2 are driven into conduction with a dead time in between. This effects that, via

the resonance circuit and the MOSFETS, energy is stored into transformer L5002 and capacitor C2001.

The secondary voltages are rectified and smoothed, these voltages are, via a voltage divider, fed to the optocoupler that influences the oscillator frequency of the control IC and stabilises the secondary voltages. If the current becomes too high, the supply is switched 'off' via the fault input of the control IC.

Advantages:

- High efficiency (more than 90%, other supplies 75%).
- Less radiation.
- More cost-effective (two MOSFETS of 400 V are cheaper than one MOSFET of 600 V).

Disadvantages:

- Very low power stand-by impossible.
- Realisation and stabilisation is more complex.

Operation V_S Supply

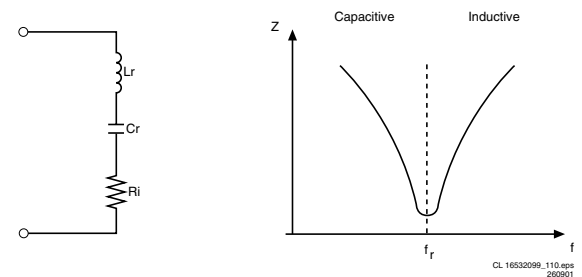


Figure 9-5 Impedance Characteristic

General

The LLC supply is a serial resonance power supply. The coil, resistor, and capacitor form a trap at the resonance frequency f_R . The impedance is frequency dependent. The smallest impedance is at the resonance frequency (f_R), at the right side of f_R is the inductive part, and at the left side the capacitive part. The supply works in the inductive part, since higher frequencies causes minor losses.

Stabilisation is realised, by regulating the frequency as function of the output voltage (V_{S_UNSW}) and power. The load is stabilised by influencing the series-loop. The higher the frequency, the lower the output power.

The supply voltage of the control IC comes from the 25V_HOT voltage of the standby supply (via stabiliser 7093), and is lead to pin 15 of the IC. The IC starts to oscillate. This supply line has a short-circuit protection via opto-coupler 7003; when the supply is regulating, the current through the opto-coupler is amplified and will deliver power to the IC.

Control is done in the usual way by a TL431 at the secondary side. V_{RS} is mixed into the feedback voltage, using an additional TL431 (7011 at schematic P6). V_{RS} , a control signal coming from the display, influences the output of the V_S supply. The output voltage of the V_S supply varies according the following formula: $V_S = 70 + (10 * V_{RS})$. Via this stabilisation circuitry for V_S , the output voltage is stabilised (if necessary, it is possible to adjust the voltage, via potmeter R3026). The V_S is fed via a voltage divider to IC7010 (TL431).

If the voltage at pin 3 of IC7010 is higher than 2.5 V, a current will flow from cathode to anode. This current flows also through the secondary side of the optocoupler 7002.

The voltage at pin 7 of the MC34067, determines the output frequency. The higher this voltage, the higher the output frequency. Thus, if the voltage on pin 7 increases, the frequency increases and V_o decreases.

When the output voltage rises, the voltage at the reference IC7010 also rises, this causes the current through the diode of the opto-coupler to rise. The transistor of the opto-coupler

conducts more, as a result of which the voltage at pin 7 of the MC34067 increases.

The output voltage of the error amplifier gets lower, and the current through R3005 increases.

Accurate Over Voltage Protection is added, using a TL431 (7304) as reference/comparator and an additional optocoupler (7003) that acts on the fault input pin 10 of the MC34067P (see also 'Protections Main Supply').

The Controller

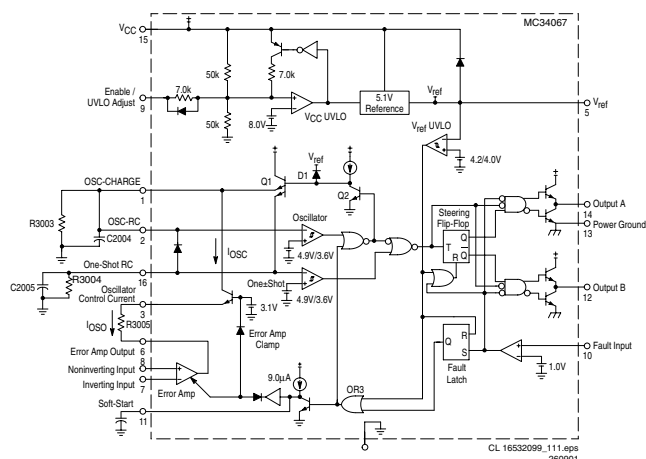


Figure 9-6 MC34067

The MC34067P controller, is used for the following reasons:

- Zero voltage switching.
- Variable frequency oscillator (above 1 MHz).
- Precision one shot timer for the dead time.
- 5 V reference output.
- Double, high current totem-pole output.
- Soft start.
- Wideband error amplifier.
- Fault input (protection).

The oscillator circuit is build around an internal comparator with two threshold-voltages: 4.9 and 3.6 V.

C2004 is first charged via transistor Q1. If the voltage across C2004 is more then 4.9 V, the output of the upper comparator becomes low, the NOR-port output will be high, and Q1 will be blocked because the base will be shortened by Q2. C2004 will be discharged via the resistors R3003 and the oscillator control current (I_{OSC}).

If the voltage across C2004 is below the lower threshold (3.6 V), transistor Q1 is conducting and the capacitor is charged again. The oscillation frequency is modulated by the oscillator control current.

The discharge current increases, when pin 3 is loaded even more; thus the lower the voltage on pin 3, the higher the oscillator control current and the higher the frequency. The maximum frequency is reached when the output of the error amp is minimal (0.1 V). Thus, R3005 determines the maximum frequency.

The minimum frequency is reached, when I_{OSC} current is zero: C2004 then discharges only via the resistor R3003.

One Shot Timer

The one-shot timer is present, to de-activate both outputs simultaneously, and to provide a dead time, so that only one output will be activated.

The one-shot capacitor (C2005) is first charged by Q1. The one-shot period begins when the oscillator comparator is switched 'off' by Q1. The one-shot capacitor is discharged via the parallel resistance (R3004): if this voltage gets lower than the lower threshold of 3.6 V, the comparator will be high and controls the flip-flop, which makes one of both outputs high.

If Q1 is re-conducted through the oscillator comparator, the one-shot capacitor is re-charged.

Fault Detector Input

At pin 10, there is a fault detector input. If this voltage reaches 1 V, the output of the OpAmp goes high, and both drive outputs are switched 'off'.

In addition, the output of OR3 will be high via the 'fault latch'. The output of OR3 drives Q1, so both the oscillator and the one-shot-capacitor remain charged. Via OR3, the soft-start capacitor is discharged.

Soft-start

Due to the soft-start circuit, the oscillator starts with maximum frequency. The low voltage on the soft-start capacitor (C2027) is buffered and keeps the error amplifier output low ($I_{OSC} = \max \rightarrow f_{OSC} = \max$).

The capacitor is charged with a current of 9 μA , the output of the buffer gets high, and the error amplifier input takes charge of the oscillator control current.

Driver stage

The two secondary windings of the driver transformer are wound in opposite directions and control the two switching MOSFETs. The primary winding of the driver transformer is alternately controlled by the two totem-pole outputs of the controller. Cross-conduction of both MOSFETs is prevented by the dead time.

The gate of each MOSFET is controlled via the resistors 3014/3017 and via the diodes 6007/6008. The transistors 7007/7008 discharge the gate faster by switching 'off'. The diodes 6017/6028 at the base-emitter of 7007/7008 prevent the zener effect of these transistors. The zener diodes at the gate-source of 7005/7006 are for ESD protection. C2011 and C2014, form the capacity for the series resonant circuit.

MOSFET switching

The total switching time can be distributed over 12 phases with different current paths. Only four phases are discussed to simplify the explanation:

Phase 1 (S1 closed, S2 open)

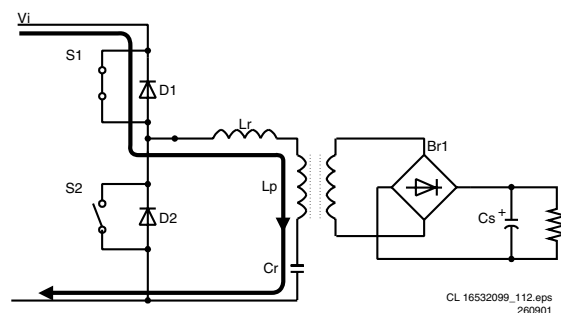
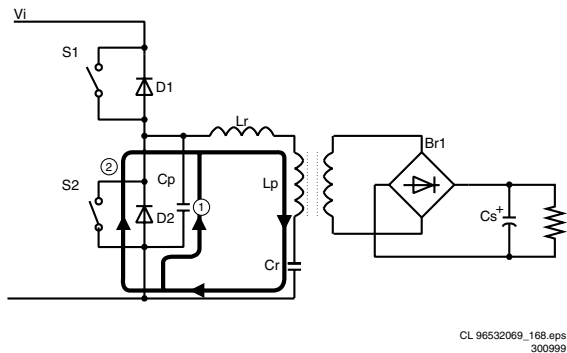


Figure 9-7 Phase 1 Resonance Supply

The gate of MOSFET 1 is positive, which causes S1 to close. The input voltage V_i of 400 V_{DC} , provides a current flow through S1 and the series circuit. At the same time, a current flows through the rectifier diodes in the secondary winding, which will charge capacitor C_s .

The current through L_r starts negative, but it is increasing to change polarity.

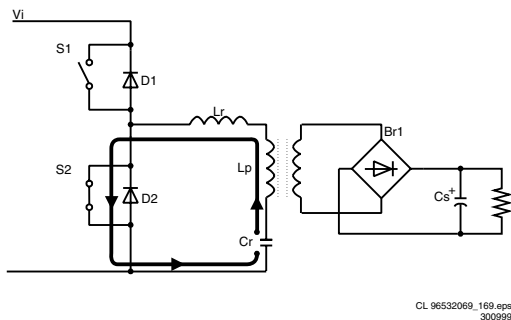
Capacitor C_r is charged sinusoidal, while the voltage at L_r drops. This makes the current drop.

Phase 2 (S1 open, S2 open = dead time)**Figure 9-8 Phase 2 Resonance Supply**

Before the current reaches zero, S1 is opened. Now, both MOSFETs are not conducting. However, the current through the coils wants to continue. The capacity Cp releases its load to the series circuit, and the voltage at Cr continues to rise (Cp is the sum of several parasitic capacities).

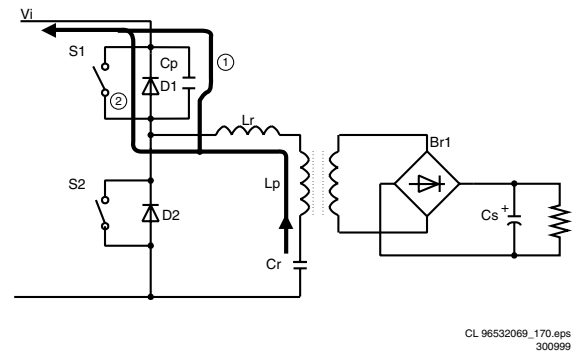
1) The voltage at the drain of MOSFET 2 drops, because Cp is discharged at this moment [1]. This causes a voltage inversion across Lr and Lp. The secondary winding begins to feed back, charging capacitor Cs.

2) The voltage becomes negative, and diode D2 starts to conduct [2]. The secondary bridge remains conducting.

Phase 3 (S1 open, S2 closed)**Figure 9-9 Phase 3 Resonance Supply**

The gate of MOSFET 2 is becoming high. The current through D2 is taken over by MOSFET 2. The switching losses are negligible, because the voltage across the switch is now approximately 1 V.

The current through Lr starts negative, but is increasing to change polarity. A current flows through MOSFET 2 and the series circuit. The bridge remains conducting, but its current gets zero because of the decreasing voltage across Lp. This is caused by the discharge of capacitor Cr. The voltage at capacitor Cr is decreasing sinusoidal and so is the voltage across Lp and Lr.

Phase 4 (S1 open, S2 open = dead time)**Figure 9-10 Phase 4 Resonance Supply**

Before the current reaches zero, S2 is opened. Now, both MOSFETs are not conducting, but the current through the coils wants to continue. The capacity Cp releases its load to the series circuit, and the voltage at Cr continues to fall (Cp is the sum of several parasitic capacities).

1) The voltage at the drain of MOSFET 2 increases, because Cp is discharged at this moment [1] (Cp was charged to 400 V). This causes a voltage inversion across Lr and Lp. The secondary winding begins to feed back, charging capacitor Cs.

2) The voltage becomes higher than 400 V, and diode D1 starts to conduct [2]. The secondary bridge remains conducting.

Protections MC34067

Over Current Protection (OCP)

The voltage at R3021 is a criterion for the current, which flows through the primary winding. Via C2015 and D6010, the negative information is clamped at -0.6 V. The total amplitude is rectified via D6009 and C2010, and via R3020 and TS7009 supplied to the fault input (pin 10) of the controller. When the fault input is higher than 1 V, the protection is activated.

Over Voltage Protection (OVP)

The voltage at R3010 is the take-over-winding voltage. This voltage is also supplied to pin 10 of the controller via a voltage divider R3010/R3011. When the fault input is higher than 1 V, the protection is activated.

Soft-start Over Current Protection

If short-term over current peaks occur, the frequency is adapted. The voltage at R3021 is clamped at -0.6 V via C2015 and D6010. The total amplitude is rectified via D6011 and C2008, and supplied to the 'capacitive' thyristor TS7017/18 via R3012.

When the voltage at the emitter of TS7017 gets higher than 5 V, the soft-start capacitor C2027 is discharged and the frequency increases. Because of this, the V_S will drop. If this voltage remains 5 V, the supply is interrupted (hick-up). This circuit is adjusted in such a way, that the voltage does not drop too much if a flash occurs.

9.2.7 Aux. Supply (Diagram P7)

The Aux. supply part, hosts the supplies, which are derived from the V_S supply:

- V_A supply,
- V_{CC} supply,
- 3V3 supply,
- Audio supply (V_{SND_POS} and V_{SND_NEG}).

V_A Supply

The V_A voltage is derived from the V_S voltage via the down converter principle. Control IC TEA1507 (item IC7112) and MOSFET TS7117 are used.

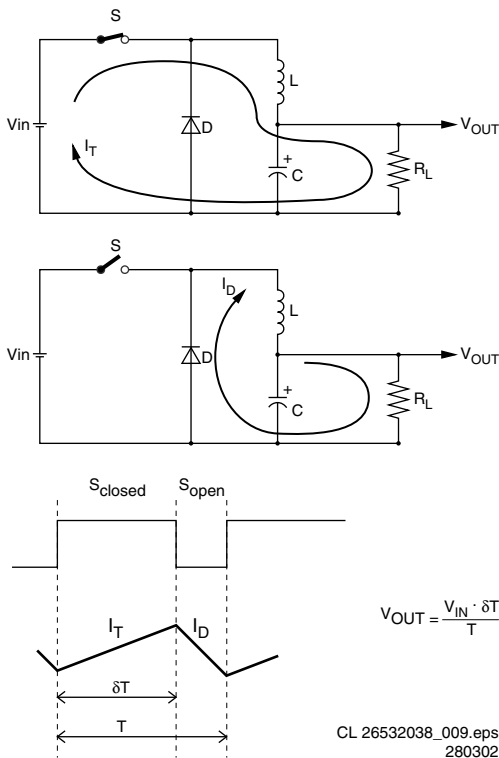


Figure 9-11 Principle of Down Converter

After closing switch 'S', the linear in time increasing current I_T , will charge capacitor C.

Opening switch 'S' will generate a counter-e.m.f. (= reverse voltage) in coil L, trying to maintain current I_T . This is possible via diode D (this diode is also called 'freewheel diode'). Therefore, after opening 'S', the magnetic energy stored in coil L will be transferred to electrostatic energy in capacitor C. The V_{IN} will only supply current during the time that 'S' is closed while a constant current is flowing through R_L .

V_{OUT} is directly proportional with V_{IN} and the time that 'S' is closed and reverse proportional with period time 'T'. Therefore, by changing the duty cycle, it will be possible to control V_{OUT} . To apply this on the FM23 (diagram P7): replace switch 'S' by FET TS7117, coil L by L5220, diode D by D6120, C by C2121, $V_{IN} = 77-100V$, and $V_{OUT} = V_A$.

Stabilising is done in the same way as for the V_S supply. V_{RA} is mixed into the feedback voltage, using an additional TL431 (7011 at schematic P6). Control signal V_{RA} , coming from the display, influences the output of the V_A supply. The output voltage of the V_A supply varies according the following formula: $V_A = 30 + (20 * V_{RA})$.

V_{CC} Supply

This part delivers, besides the V_{CC} voltage (+5 V), also a +12 V (for optional Fan control) and derived from that, an +8V6 (for small signal analogue circuitry).

The V_{CC} voltage is derived from the V_S voltage via the flyback converter principle. Control IC TEA1507 (item 7212) and MOSFET 7212 are used.

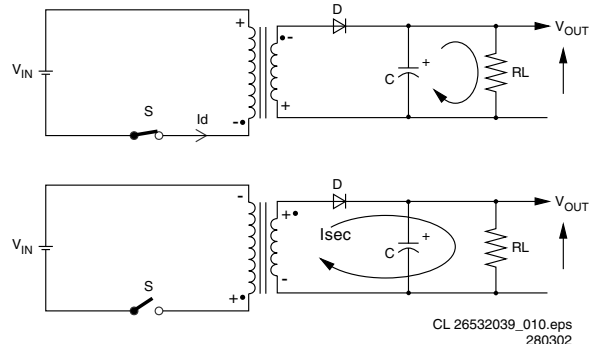


Figure 9-12 Principle of Flyback Converter

After closing switch 'S', the current I_D will increase linear in time. The magnetic energy in the primary coil is directly proportional with the self-inductance of the coil and current I_D (thus with the time the switch is closed). The voltage polarity at the secondary winding is negative (due to different winding direction), meaning that diode D will block. Capacitor C will discharge via R_L , V_{OUT} will decrease.

Opening switch 'S' will generate a counter-e.m.f. in the primary winding, trying to maintain current I_D . Through this the polarity of the secondary voltage will invert. The magnetic energy, stored in the coil, will now be transformed to the secondary side. Diode D will now conduct, capacitor C will be charged and V_{OUT} will increase.

To apply this on the FM23 (diagram P7): replace switch 'S' by FET TS7217, coil L by L5220, diode D by D6224, C by C2224, $V_{IN} = V_{S_UNSW}$, and $V_{OUT} = V_{CC}$.

3V3 Supply

The 3V3 voltage, is directly derived from the LLC supply (+18V line). Via a fuse (1005/1045), this voltage is rectified by diodes 6021/6045 and smoothed by C2022. Via control IC L4973V (item 7260), the 3V3 voltage is generated. This IC contains a complete down converter, with integrated MOSFET.

Audio Supply

This is a 'floating' symmetrical supply ($\pm 14.5 V$) derived from V_S via transformer 5290. Because this voltage is tightly coupled to the V_S voltage, this voltage varies considerable, between 11 V (max. load, $V_S = 70 V$) and 20 V (min. load, $V_S = 90 V$). The Audio ground is connected to the normal secondary ground, with a capacitor (C2290) and a resistor (R3292) in parallel, to have the possibilities to suppress spurious oscillations.

9.2.8 Power Supply Protections (Diagram P3)

Introduction

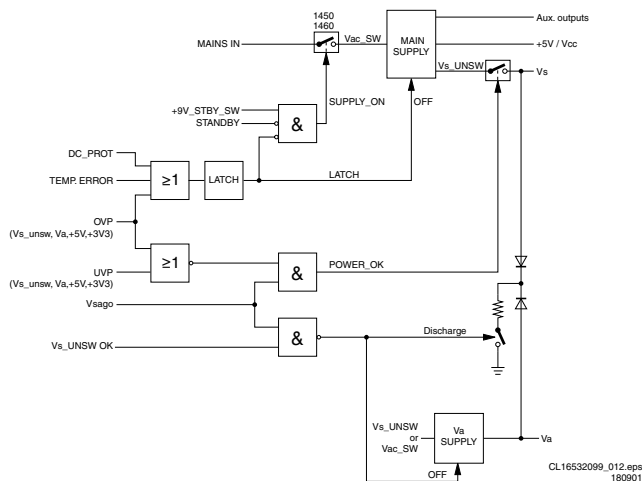


Figure 9-13 Protections

In general, all efforts need to be taken, to make a safe power supply. Therefore, all major outputs are monitored with respect to over- and/or under voltage. All protections are handled by hardware. The software only monitors the hardware to generate error codes for service.

Via I²C, errors of the power supply are transmitted to the μ P on the SCAVIO panel. If an error occurs, POWER_OK will change from 'high' to 'low'. The errors are transmitted to the μ P, on the following ports and pin numbers of the I/O expander PCF8574AT (item 7370):

Table 9-2 IC7370 Inputs

Pin	Name	Description
4	Vs	Detection of under- or overvoltage on Vs
5	Va	Detection of under- or overvoltage on Va
6	+5V	Detection of under- or overvoltage on +5V
7	+3V3	Detection of under- or overvoltage on +3V3
9	OVP	Detection of overvoltage on Vs, Va, +5V or +3V3
10	Switch	Detection of functional switch
11	DC_PROT	Detection of DC_PROT going high
12	TEMP	Detection of over temp. inside power supply

This POWER_OK signal is connected to an interrupt pin of the OTC, in order to be read as fast as possible. This is very important in case of a time limited error like over voltage. After detection of the error, the control system will log the error in NVM, and transmit the first occurrence back to the power supply through the I²C bus.

Note: The POK signal is fed to buffer 7366, together with the '8V6 UNDER VOLTAGE' and 'SWITCH' sensing. The output of this buffer, the POWER_OK line, will follow the inputs.

Operation

V_S Protection

Detection of over- or under voltage on V_{S_UNSW} by comparators IC7308-A and -B. If this voltage exceeds certain levels (set via voltage dividers), the protection will activate the Power OK (POK, active 'low'), which will shut down the set.

V_A Protection

Detection of over- or under voltage on V_A by comparators IC7308-C and -D. If this voltage exceeds certain levels (set via voltage dividers), the protection will activate the Power OK (POK, active 'low'), which will shut down the set.

V_{CC} Protection

Detection of over- or under voltage on V_{CC} (+5 V) by comparators IC7330-A and -B. If this voltage exceeds certain levels (set via voltage dividers), the protection will activate the Power OK (POK, active 'low'), which will shut down the set.

+3V3 Protection

Detection of over- or under voltage on the +3V3 voltage by comparators IC7330-C and -D. If this voltage exceeds certain levels (set via voltage dividers), the protection will activate the Power OK (POK, active 'low'), which will shut down the set.

OVP protection

This line detects, if one of the above mentioned voltage protections is an over voltage protection. Therefore, this works in combination with the above mentioned under-/over voltage protections.

Latch Protection

When an OVP-, DC-, or Temperature protection occurs, thyristor 6348 is fired and the LATCH signal is made 'low'. This signal will switch 'off' the main supply and prevents that the supply is switched 'on' again, as long as the protection is active. In addition, the V_{CEGO} signal can activate the LATCH signal (via TS7352 and 7348), but this is temporarily. This is done for correct start-up behaviour.

DC Protection

Detection of a DC voltage on the audio amplifier outputs. If a DC voltage is detected, TS7362 will activate the Power OK (POK, active 'low'), which will shut down the set.

Temp Protection

Detection of the temperature (via PTC 3368) in the power supply by comparator IC7366-A. If this voltage exceeds a certain level (set via voltage dividers), the protection will activate the Power OK (POK), which will shut down the set.

9.3 VGA Connector Panel (Diagram VGA)

The Video Graphics Array (VGA) panel serves as an interface between the peripheral VGA equipment (Receiver box, PC, etc.) and the SCAVIO panel. Some specifications of this panel:

- Two NVMs are present, which hold identification data for the DDC line.
- Further, there are buffers present for the incoming and outgoing sync signals.
- RC_OUT cinch for linking with other equipment.
- Provision to terminate the incoming sync lines with 75 Ω via the EBOX_PRESENT line.

For a description, see the next **SCAVIO** chapter.

9.4 SCAVIO Panel (Diagrams SC)

The Scaler Control Audio Video Input Output (SCAVIO) panel contains:

- All the input connectors,
- Analogue and digital video processing,
- Scaler (co-processor)
- Interface to the PDP,
- Audio processing (excluding the audio amplifier),
- OTC (main processor), and
- RS232C in/out.

Note: There are two versions of this panel, a *Basic* and an *Enhanced* version. Therefore, a lot of components are therefore not mounted for the *Basic* version.

For the circuit description, we divide the board into the following parts:

1. Supply
2. Video processing
3. Audio processing
4. Control

9.4.1 Supply

See figure 'Power Supply Part' in paragraph 9.1.5.

9.4.2 Video Processing (Diagrams SC3, 4, 5, 6, 10, 11 and 12)

Introduction

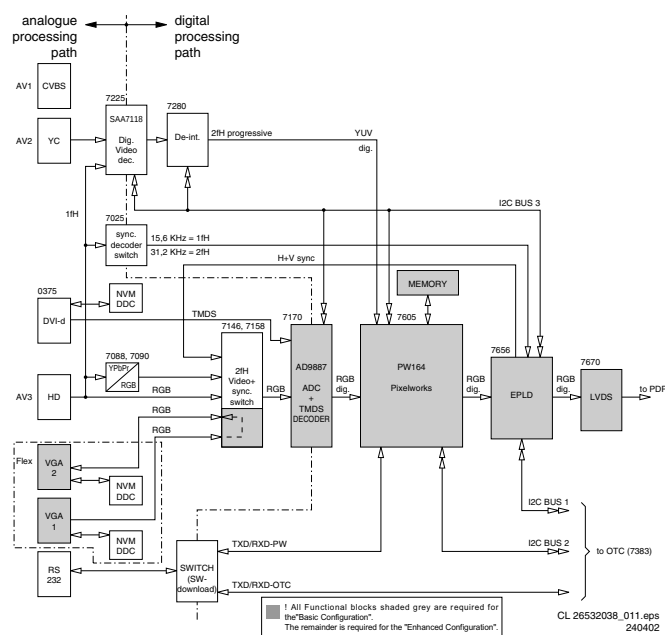


Figure 9-14 Video path

This mainly consists of a small **analogue** processing part and a bigger **digital** signal processing part.

The video inputs like CVBS, YC, High Definition RGB, or YUV (1fH and 2fH), VGA, and DVI-D are received and processed. The YPbPr (2fH) is discretely converted to RGB, whereas the YCbCr (1fH) is processed in the SAA7118 Digital Video decoder. The base-band video inputs (CVBS and YC) are output from the digital video decoder as digital YUV, which are then further processed by the PixelWorks Scaler.

The VGA signals are first AD converted and then processed by the PW Scaler.

The digital input on the DVI is first decoded by the TMDS decoder inside the AD9887 and then processed by the PW Scaler.

The PW Scaler output is going through an EPLD and then via the LVDS transmitter to the PDP (Plasma Display Panel) as differential serial data. The PDP is based on ALiS (Alternate Lighting of Surface) technology and is an interlaced display, with separate ODD and EVEN fields to be displayed.

Analogue Video

This part describes the analogue video and synchronisation path of all inputs, until it reaches the 'analogue digital converters' of either the AD9887 (ADC+TMDS Decoder) or the SAA7118E (Digital Video Decoder).

Also the switching part is described and the necessary control signals.

In principle, all video control functions are done by the PixelWorks processor.

Note: This part also includes the VGA connector panel that is mounted on top of the SCAVIO panel.

Inputs

There are five video inputs, which are divided in three types:

- **VGA (2fH):** named VGA1 and VGA2. Both are 15-pole SUB-D connectors for RGB and HV, and are situated on the VGA connector panel. For automatic identification by a PC, each VGA input is foreseen with a DDC NVM IC. VGA2 is set default as loop through of VGA1. In the *Enhanced* version, VGA2 can be switched as output, via the control signals VGA2_OUT and VGA2_EN.
- **YPbPr/RGB** (combined 2fH and 1fH): named AV3 and suitable for YCbCr/HD-YPbPr/HD-RGB + HV. These are cinch inputs. YPbPr and RGB are seen as separate inputs by the HW and must be properly selected by SW.
- **CVBS like** (1fH): named AV1 for CVBS and AV2 for Y/C. These are also cinch inputs.

Video Path

The 1fH signals (including YPbPr) are buffered (item 7113/21/17) and go directly to a digital video processor, the SAA7118E (item 7225 on diagram SC5), where they are converted into a digital signal.

The 2fH signals are also buffered; both YPbPr (item 7074/84/79) and RGB (item 7141/38/35) buffers get the same input signals.

When YPbPr signals are connected, the correct input must be selected, to get a picture with proper colours. Thus, the signals must pass a video matrix (item 7088/90, see diagram SC3), where they are converted into RGB. There are two matrices, an NTSC and an ATSC. With the MATRIX_SEL signal, the correct matrix is chosen (item 7089). The detection is done automatic, by an algorithm in the EPLD.

After the matrix, the signals enter a clamp/blanking circuit (7102/03/04 and 7100), for the removal of the residual sync signals. The control is done via the lines HD_BLANKN and HD_CLAMPN coming from the EPLD.

All RGB signals come together at 4-pole switches (item 7146/58), one for each colour, where they are switched to the AD converter item 7170 (R_ADC, G_ADC and B_ADC).

Sync Path

All incoming H and V sync signals go to a 4-pole switch (item 7009) where SYNC_SEL and VIDEO_SEL_2 determine, which signal is available on the ADC.

Before this switch, the VGA sync path is rather straight, only 1 switch (item 7007) is added for the VGA2 sync signals, which determines if VGA2 sync is input or output (VGA2_OUT).

In the *Basic* configuration, these switches are omitted, and replaced by jumpers (4009/4010).

The external sync (AV1 - 3) signals are treated differently. Both H_HD_EXT and V_HD_EXT go to three circuits:

- A comparator circuitry with an LM319 (item 7025), to ensure both sync pulses are always positive going (H and V_SYNC_CMP),
- A level detection circuitry (items 7000 to 7002), to detect if the sync is of TTL level (H and V_SYNC_TTL),
- A positive/negative going detection circuitry (items 7006 to 7010), to indicate the polarity of the sync in case of TTL level (H and V_SYNC_POL_N).

All above-mentioned signals go to the EPLD (see diagram SC11) for further processing.

Processed sync signals H_HD and V_HD coming from the EPLD, are also switched to the ADC (H_ADC and V_ADC) along with the proper RGB signals (R_ADC, G_ADC and B_ADC).

Digital Video

This part describes the digital video path on the SCAVIO panel, starting at the AD converters in either the AD9887 (item 7170) or in the SAA7118E (item 7225) and ending at the output for the PDP.

For both the *Basic* as the *Enhanced* version, everything 'after' the PixelWorks chip, is equal.

For the *Basic* version, the input for the PixelWorks only consists of the 'Graphics path'.

For the *Enhanced* version, it is both the 'Graphics path' as the 'Video path'.

The SCAVIO panel contains the following functions in the video path:

1. The 'YPbPr to RGB matrix' and '2fH Video+Sync Switch' are explained above in the 'Analogue Video' part.
2. The 'Digital Video' path containing the Digital Video Decoder and the De-interlacer.
3. The 'Digital Graphics' path containing the ADC+TMDS decoder.
4. The 'Scaler' which is the PixelWorks (PW164-10R) plus Memory.
5. The 'EPLD' for sync decoding and video manipulation.
6. The 'LVDS' encoder.

The Digital 'Graphics Path'

This is a straightforward application of the Analogue Devices AD9887 (item 7170). Inputs for this device are:

- FTV Receiver box,
- VGA formats (up to SXGA@75 Hz),
- 2fH RGB+HV (only in *Enhanced* version),
- 2fH YPbPr, which is converted to RGB by the 'YUV to RGB' matrix (only in *Enhanced* version),
- DVI-d (only in *Enhanced* version).

Analogue input: The AD9887 is meant to sample 'pixel synchronous'. To achieve this, a (software) driver is running on the PixelWorks processor (PW). After hooking up a source to the AD9887, the PW starts counting the number of lines per field and calculates the H-period time. With these two values, it determines the exact match or the closest match out of a look-up-table (LUT) with VGA standards. When the correct standard is determined, the PW will set the AD9887 I²C registers to the correct value. The AD9887 should now sample with exact the same frequency as the incoming standard requires. This is done to get an optimal picture performance.

It also is a 'must' when a computer graphics card is connected, because there is no, or very little, post anti-aliasing filtering done on such cards. Therefore, the outputted RGB samples need to be exactly aligned with the sampling of the AD converter.

Analogue input signals can go up to SXGA@75 Hz, which gives a pixel clock of 135 MHz. In fact, it can handle any standard with a pixel rate up to 140 MHz.

Special modes are made for the F21R E-box, for both PAL and NTSC. These are invoked when an E-box is connected to the SCAVIO panel.

Digital input: Via the DVI connector (*Enhanced* version only) it is possible to insert TMDS (Transition Minimised Differential Signalling) data into the SCAVIO panel. DVI is a fairly new computer graphics standard, which can be seen as the digital follow-up of the analogue VGA interface. The TMDS signal is directly fed into the AD9887, where any DVI standard up to SXGA@60 Hz can be decoded to RGBHV.

The preferred VGA standard for the FM23 is programmed in the DDC EEPROM (item 7215), which can be read by the PC. Via an internal switch, it is possible to choose between the analogue input and the digital input. The output format is for both inputs the same (8 bit RGB plus HV). The driver determines whether the AD9887 outputs single or dual pixels. For lower standards like VGA@60Hz, the interface will be single pixel, which means that every clock cycle one byte of R, G, and B data is outputted. Dual pixel means that on every clock cycle two bytes of R, G, and B data outputted. These two

bytes are de-multiplexed, which is done to make the interface more robust for jitter, set-up, and hold times, and to reduce the digital data rate over the PCB (reduced EMC).

Digital 'Video Path'

This path is only available in the *Enhanced* version of the SCAVIO panel and is used for the following input signals:

- CVBS input,
- Y/C input, and
- 1fH YPbPr.

It is a straightforward application of the Philips SAA7118 (item 7225) and the Micronas SDA9400 (item 7280).

The SAA7118 is a PAL/NTSC/SECAM Digital Video Decoder with adaptive digital comb filter and component video input. It decodes all input standards to 4:2:2 YCbCr, which then is processed by the SDA9400.

The SDA9400 is a motion adaptive de-interlacer, which makes a progressive video signal from the interlaced input.

Depending on the motion in the picture, it will just interleave the odd and even field (no motion: ABAB) or repeats the same field twice; this is also known as line doubling (motion: AABB). The motion detection is pixel based, with a soft-switch between 'motion' and 'no motion'.

After the de-interlacer, the signal is fed as a 4:2:2 YCbCr progressive scan signal to the video port of the PixelWorks processor.

The PixelWorks PW164 Scaler

The PixelWorks PW164 Image Processor is a highly integrated (Ball Grid Array, BGA) chip, which interfaces video inputs and computer graphics in virtually any format to the PDP.

Computer images from VGA to UXGA resolution input to the chip can be resized to fit on the PDP. Horizontal and vertical image scalers, coupled with intelligent frame locking circuitry create sharp images, centred on the screen and without user intervention. An embedded DRAM frame buffer and memory controller perform the frame rate conversion.

Video data from 4:3 aspect ratio NTSC or PAL and 16:9 aspect ratio sources such as HDTV and DVD are supported. Non-linear scaling (only with Receiver Box) and separate horizontal and vertical scalers allow these inputs to be resized optimally for the native resolution of the PDP.

For more information, see <http://www.pixelworksinc.com/index.phtml>

Table 9-3 PixelWorks Scaler: Ports

Pin	Name	I/O	Remark
C2	PW_SCL	+3V3 output	to I2C devices, Video related
B1	PW_SDA	+3V3 output	to I2C devices, Video related
A1	PW_SDA_NVM	+3V3 output	to I2C device NVM
C4	PW_SCL_NVM	+3V3 output	to I2C device NVM
B3	SCL_2	+3V3 output	to I2C device OTC
A2	SDA_2	+3V3 output	to I2C device OTC
A3	VIDEO_SEL_1	+3V3 output	to video selection switches (see truth table)
C5	VIDEO_SEL_2	+3V3 output	to video selection switches (see truth table)
B4	VGA2_OUTN	+3V3 output	Selects VGA 2 as output. (Low => Output)
A4	VGA2_EN	+3V3 output	Enables VGA 2 (High = Enable)
C6	SYNC	Input	Is 'high' if EPLD detects separate sync signals on YPbPr
B5	1_2FH	Input	Is 'high' if sync on YPbPr is 1fH (from EPLD)

Table 9-4 PixelWorks Scaler: Video Select

VIDEO_SEL_1	VIDEO_SEL_2	Selected input for AD9887
0	0	RGB 2fh
0	1	YPbPr 2fh
1	0	VGA 1
1	1	VGA 2

Service remark: Desoldering/soldering of this IC requires very specialised (BGA) equipment. This can only be done by the Authorised Service Centres (ASC).

The EPLD

The main reason to add the EPLD is the contrast reserve function. Other reasons:

- **Black and white ADC adjustment.** The EPLD provides a high-resolution measurement of the black and white level, to adjust the gain and offset of the ADC (AD9887). It is read via I²C.
- **LVDS reset.** This function resets the LVDS transmitter on the SCAVIO board, in case the LVDS transmitter starts up without a clock. This could cause an abnormal picture. Therefore, as soon as the clock is not fast enough (as during start-up) the EPLD will keep the LVDS transmitter in reset.
- **Receiver-box mode detection.** For loop through mode (a second FTV monitor connected to the output of the first monitor), a secondary detection is needed to check the presence of an Receiver or E-box.
- **ATSC sync detection/ decoding.** Core for proper sync decoding for ATSC sources.
- **Contrast reserve.** This function can increase the gain of the video signal to a factor of two. It will reduce the gain again if it sees too many overflows (code 255) in any of the R, G, or B channels. Adjustable via two parameters: user contrast and overflow limit. Parameters are I²C controlled.

The LVDS transmitter

This DS90C385MTD56 IC from National Semiconductors converts 28 bits of CMOS/TTL data into four LVDS (Low

Voltage Differential Signalling) data streams. A PLL transmit clock is transmitted in parallel with the data streams over a fifth LVDS link. Every cycle of the clock, 28 bits of input data are sampled and transmitted. At a transmit clock frequency of 36 MHz, 24 bits of RGB data and 3 bits of display control data are transmitted per LVDS data channel. This IC operates at 3.3 V

For more information, see <http://www.national.com/>

Picture Mute

In some cases, it is necessary to mute the video output:

- In Monitor mode:
 - During switch 'on/off' of the monitor,
 - During source change,
 - During video or sync loss, or
 - By a user action (A/V-mute or mute)
 - In audio only mode (when the ICONN-box is connected).
- In TV mode:
 - During switch 'on/off' of the Monitor/Receiver box,
 - During source change in the Receiver box,
 - During video or sync loss, or
 - In audio only mode (Receiver box mutes the picture).

Most of the picture mute controls are done via the PixelWorks co-processor.

Anti Ageing

In order to prevent visible luminance differences, due to ageing of the monitor, a special algorithm is implemented. This algorithm is based on horizontal shifting of the picture in the monitor. For good understanding some terms will now first be explained:

- **Ageing:** The effect that the efficiency of a plasma cell (pixel) decreases as a function of the total time that it is illuminated. This effect occurs mostly because of phosphor ageing. As a result, the cell brightness decreases over time. An alternative name for ageing is 'burn-in'.
- **Picture shifting:** Fixed structures, like logo's, OSDs, and subtitles, will cause burn-in effects. The only way to mask this to a certain extends, is picture shifting so that the 'burn-in' effect is smeared out over a larger area, and makes it less visible.

Most of the anti-ageing controls are implemented in the PixelWorks co-processor.

Horizontal

Horizontal anti-ageing steps:

- **Step width/height,** the step width/height shall be 1 horizontal pixel width (approx. 1 mm).
- **Number of steps,** the maximum number of steps in horizontal direction shall be 9.
- **Time between steps,** the time between the steps shall be 5 minutes.

The effect of H anti-ageing is a horizontal movement (start at 0):

0 → 1 → 2 → 3 → 4
 12 ← 11 ← 10 ← 9 ← 8 ← 7 ← 6 ← 5 ←
 → 13 → 14 → 15

With the following sequence:

0 → 1 → 2 → → 14 → 15 → 0 → 1 → etc.

After every step, the updated value is stored in NVM and gives an indication about the direction (0...4 and 13...15 to the right and 5...12 to the left).

The horizontal anti-ageing is a process, which is basically independent of any other processes that are running in SW. This means that this process should never be reset in order to get the best anti-ageing effect. Therefore, the horizontal shift positions and directions need to be stored in NVM, so that he anti-ageing process returns to its latest position after the set has been switched off or to standby. There is only one H and

one V shift value for the anti-ageing process that is applicable for the AV1, AV2, and AV3 inputs.

Note: Horizontal shift cannot be done for sources that are screen filling and do not have sufficient overscan.

Vertical

V-shift is done in the F21RE Receiver box when the TV mode is active, or in the *enhanced* configuration when the monitor mode is active.

Vertical anti-ageing steps:

- **Height/height**, the height/height shall be 1 display line (approximately 1 mm).
- **Number of steps**, the maximum number of steps in vertical direction shall be 9.
- **Time between steps**, the time between the steps shall be 80 minutes, which equals one complete horizontal ageing shift (16 steps x 5 minutes).

The effect of V anti-ageing is a vertical movement (start at 0):

```

4
↑ ↓
3 5
↑ ↓
2 6
↑ ↓
1 7
↑ ↓
0 8
↓
  9 15
  ↓ ↑
 10 14
  ↓ ↑
 11 13
  ↓ ↑
12

```

With the following sequence:

0 → 1 → 2 → → 14 → 15 → 0 → 1 → etc.

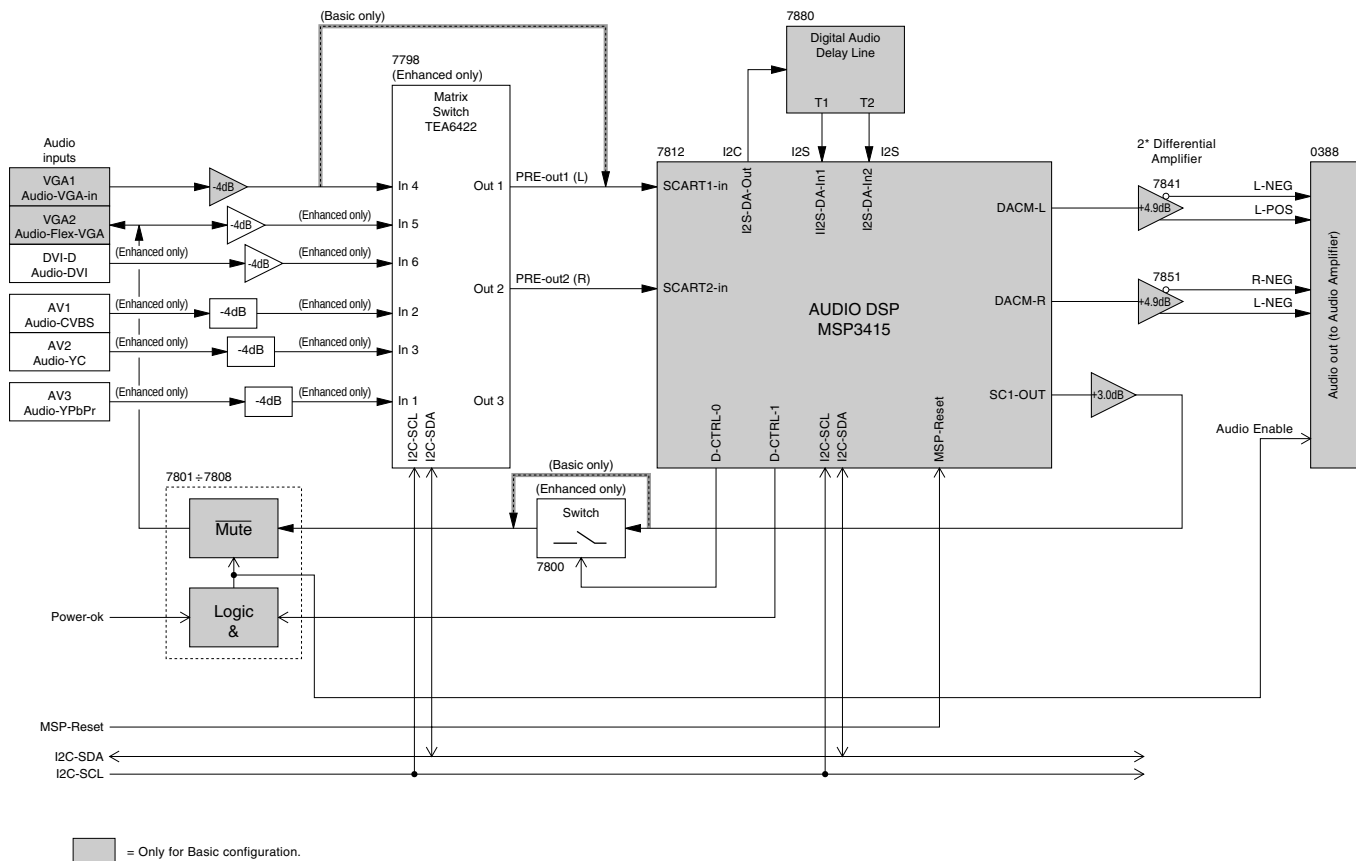
After every step, the vertical shift position and its direction are stored in NVM. So the anti-ageing process returns to its last position after the set has been switched off (or to standby). Also, if by any cause (i.e. VGA-source selection or when service/factory mode is active), the anti-ageing process is stopped; the vertical shift position should be restored after resuming the anti-ageing process.

9.4.3 Audio processing (Diagrams SC13, 14 and 15)

This chapter describes the audio processing on the SCAVIO board. The circuit enables to connect several audio sources, selects the source on the desired input, and performs audio

processing and audio delay. It also matches the output signals for the Audio Amplifier panel.

The sound-related electronics for FM23 are very straight forward, and consists of a Micronas MSP3415G sound processor, an active highpass and lowpass filter, and separate Class-D amplifiers for woofers and tweeters.



CL 26532038_012.eps
280302

Figure 9-15 Audio Path

The processing part consists mainly of the following components:

- **MSP3415G:** a DSP sound processor from Micronas. This component is able to do all kinds of digital signal processing like volume, bass/treble, UltraBass and balance. It has analogue inputs and outputs, as well as an I²S in/output used for digital audio delay.
- **RAM** with its logic to be able to store the I²S information for audio delay.
- **Anti-plop/ mute circuit:** which is necessary to prevent disturbances on the audio lines during start-up or switching.
- **TEA6422:** a matrix switch of ST. This component is able to switch six inputs to three different outputs (only used in the *Enhanced* version).

MSP3415G

Ultra Bass

Because of the closed box implementation in FM23, a common DBE solution will not give an optimal bass performance. A closed box needs a substantial boost over a wide frequency range, while DBE operates in a limited frequency region. Adaptive Ultra Bass 2 (UB2) is a suitable alternative. This feature is based on the psycho-acoustic effect of the missing fundamental, and gives the impression of a deep bass while the loudspeakers do not reproduce these low frequencies. This feature is implemented in the MSP3415G.

Audio delay

To compensate for 'lip sync error' (the difference in time between the aural and visual perceptions), two different audio delays are selectable via the customer's menu (one for the Receiver box and one for the Monitor). This is done at the audio processor IC7812 via an I²S bus and an additional delay circuit (IC7880 - 7882).

One can select delays of 24 ms (I2S_DATA_IN1) and 40 ms (I2S_DATA_IN2), or no delay.

In case of a delay, the AUDIO_L/R_IN is re-routed as I2S_DATA_OUT to the audio delay circuit and, depending on the selected delay, returned as I2S_DATA_IN1 or I2S_DATA_IN2, resulting in AUDIO_L/R_OUT.

Anti-plop/Mute

In several cases, it is necessary to mute the sound output. This muting is handled by the MSP sound processor, or by the Receiver box in case of TV-mode.

- In Monitor mode:
 - During switch 'on/off' of the monitor.
 - During source change.
 - During video or sync loss, or
 - By a user action (A/V-mute or mute).
- In TV mode:
 - During switch 'on/off' of the Monitor/Receiver box.
 - During source change in the Receiver box.
 - During video or sync loss, or
 - By a user action (mute).

9.4.4 Control (Diagrams SC7, 8 and 9)

Introduction

As a main controller, the so-called ARTISTIC is used, better known as OTC (On screen display, Teletext and Control). It is a 8051 (XA) based controller from Philips Semiconductors, the SAA5801H.

Although the OTC is the main controller, it acts as a 'slave' when communicating with the PixelWorks IC via the I²C-bus 2.

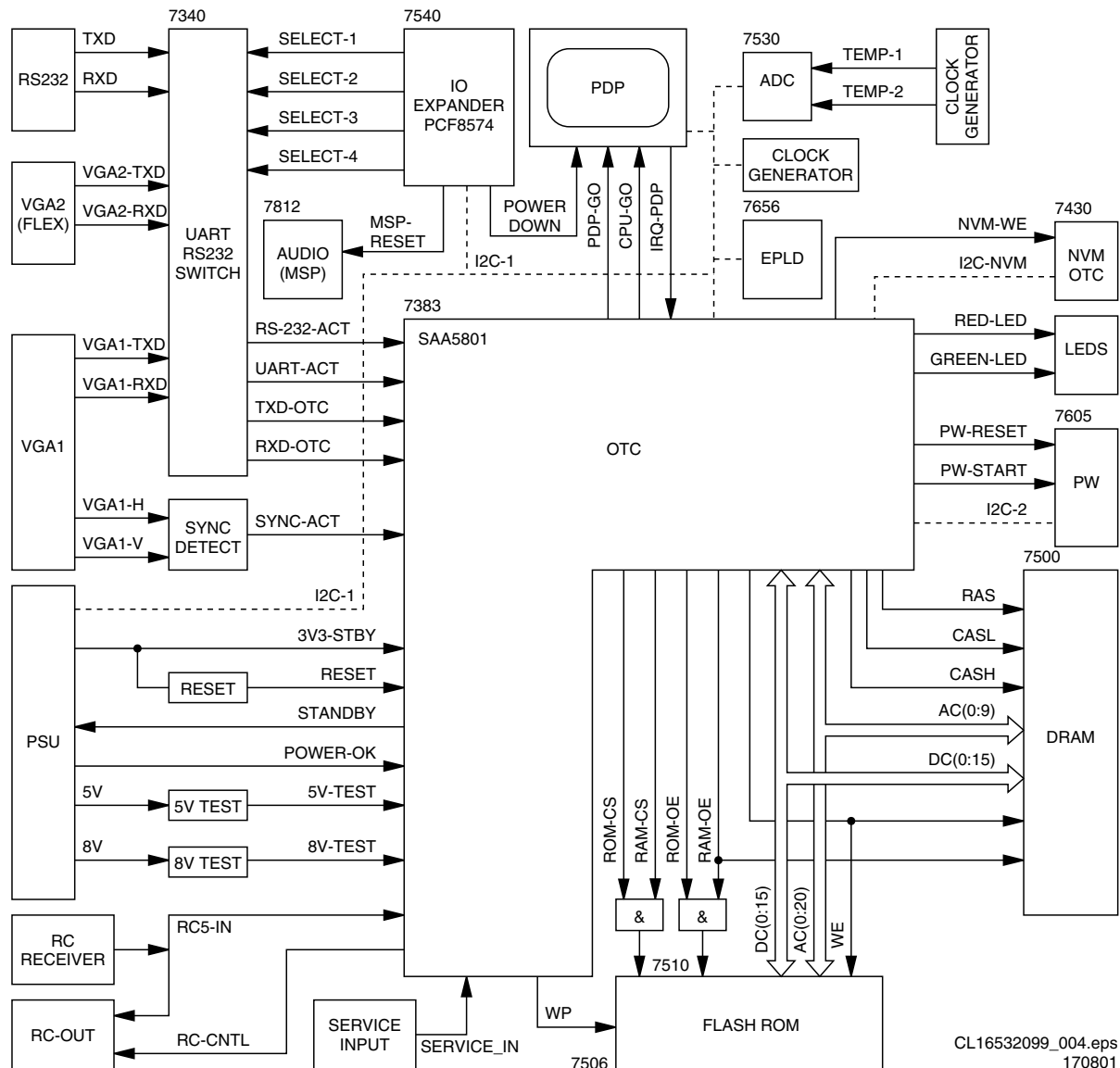
When the monitor is connected to an F21RE Receiver box, the UART commands from the Receiver box will control the monitor.

In stand-alone mode, the monitor can be controlled via the Remote Control or via the RS232C port.

DDC1/2B (Display Data Channel, an I²C based protocol) is implemented with separate NVMs for the two VGA inputs and the DVI-D input as well.

It is also possible to use the RS232C port for software upload to the PW Scaler and the OTC. The target for downloading is controlled via a switch in the RS232C path; the switch itself is controlled by the OTC.

OTC Processor



CL16532099_004.eps
170801

Figure 9-16 Control Part

This part describes the Main Control part of the SCAVIO panel and the interfaces with the software. The control function consists of the following tasks:

- Control of external IOs, like fan speed, temperature, service and RC5,
- UART communication with Receiver box,
- RS232 control / communication,
- Supports the uploading of new SW into the Flash-ROMs,
- Start-up of monitor and initialisation via I²C,
- Error detection and storing.

Start-up and Shut-down

The POR signal is not generated on the PSU, but on the SCAVIO board. This is done with a fully integrated ADM810T POR chip (item 7517), which senses the 3.3 V coming from the PSU. The sense level is 3.08 V. During power-up as well as power-down, this chip will make the RESET signal high. During power-up, this signal will be held 'high' until 240 ms after V_{CC} has become stable.

During power-down, the system will be reset as soon as the V_{CC} drops below 3.08 V.

Start-up from Standby

When the monitor is in standby mode, it can wake-up in several ways:

- When an RC command is received (RC_IN).
- Detection of H- and/or V-sync on VGA1.
- Detection of UART communication on VGA1.
- Detection of RS232 communication.
- Detection of Service modes.

RC Command Reception

When a RC command is received at the RC receiver on the LED panel, it will go directly to the RC input of the OTC (RC_IN on pin 100). If the monitor is in standby, and a proper RC command is send, it will wake up.

The RC commands are routed to the Receiver box via the VGA1 connector pin 9 (RC_VGA1), but this loop through connection is controlled by RC_CNTL. Below is the truth table.

Table 9-5 RC Commands overview

FTV2.1E-box	FTV2.3Monitor	RC commands	RC_CNTL
In Standby	In Standby	Send to E-box	Low
In Standby	On	Blocked	High
On	In Standby	Send to E-box	Low
On	On	Send to E-box	Low

Note: All RC commands are direct available on a separate RC-out cinch connector (RC_OUT) on the VGA connector panel.

H- and/or V-sync Detection

When both H and or V sync are present on VGA1, there is a pulse (low) on SYNC_ACT. When only H is present, SYNC_ACT is continuously low. The SW disables the interrupt, once an interrupt is received.

UART Communication Detection

When there is UART communication on VGA1, the UART detection circuitry generates on every falling edge a pulse on UART_ACT. This is a negative going pulse with a width of ± 470 s. The first pulse will trigger the main software to check for the FTV System Protocol (FSP). The SW disables the interrupt, once an interrupt is received.

RS232 Communication Detection

When an RS232 connection is made, and communication is started (pulses on RS232_RXD), RS232_ACT becomes 'high'. Via a transistor, RS232_ACT will make SERVICE_IN low. When the Monitor is operating (+5 V available), this signal is made low (in fact it is disabled).

Service Mode Detection

It is possible to enter four different Service Modes (provided the OTC is still supplied by the +3V3_STBY).

Via the SERVICE_IN signal, which is an ADC input of the OTC, a voltage drop is detected from +3.3 V to VX.

VX is a DC voltage, which represents the mode to be entered:

Table 9-6 Service Mode levels

Service mode	Limits Vx [V]	Vx [V]	Remarks
SDM	$3.0 > Vx > 2.4$	± 2.6	0382-2 to GND
SAM	$2.4 > Vx > 1.8$	± 2.0	0382-4 to GND
COMPAIR	$1.8 > Vx > 1.2$	± 1.4	0382-6 to GND
RS232 active	$Vx < 0.8$	>0.8	Plug in RS232, start program

I²C

There are four I²C busses used in the monitor (see also I²C overview in chapter 6):

- **I²C bus 1** is a (5 V) device bus, controlled by the OTC, and connected to the following devices:
 - PDP.
 - EPLD.
 - IO expander SCAVIO - PCF8574A.
 - IO expander PSU - PCF8574A.
 - ADC - PCF8591.
 - Clock generator for PW - FS6377.
 - Sound processor MSP3415G.
 - Audio switch TEA6422 (*Enhanced* version only).
- **I²C bus 2** is used for communication with the PixelWorks co-processor (PW). Although the OTC is the main controller, it will act in this case as a 'slave', since the PW can only act as a 'master'. Before any I²C commands are exchanged, the PW gets an interrupt (PW_START) to indicate that the OTC wants to talk to the PW.
- **I²C bus 3** is a (5 V) device bus, controlled by the PW, and connected to the following devices:
 - Video Decoder SAA7118 (*Enhanced* version only).
 - De-interlacer SDA9400 (*Enhanced* version only).
 - ADC/TMDS receiver AD9887.
 - 3D Comb filter MN8783LSI (optional).
- **I²C bus 4** is a (5 V) device bus, only connected to the NVM (to avoid data corruption).

Notes:

- The PDP and EPLD are in fact 3.3 V bus devices, but they need to be connected to bus 1, since the OTC is the first controller to be fully operating at start-up. For this reason, an I²C level shifter (items 7675/76 on diagram SC12) is included, which converts the 5 V signals into 3V3 and visa versa.
- One of the first commands is to set the clock generator (item7570), else the PW can not start-up.

RS232/UART

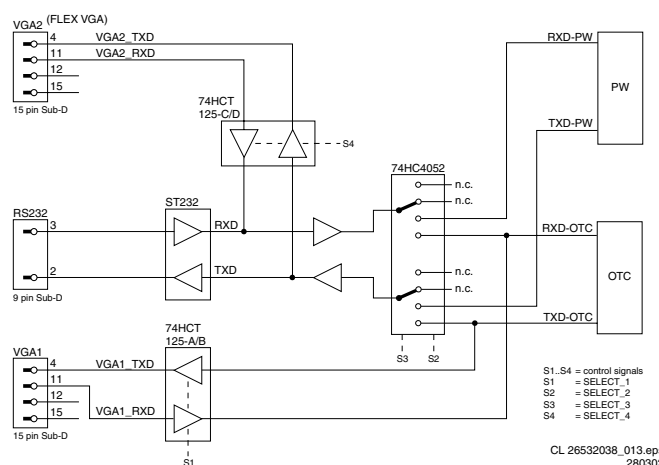


Figure 9-17 RS232/UART

Introduction

The FM23 monitor is equipped with an RS232 interface. Via a 9 pin Sub-D connector, it is possible to connect a PC for special modes like:

- SW download.
- Factory purposes.
- Service.
- Professional use.

A second option is the connection of a so-called ICONN-box for Institutional TV (Hotel TV).

For communication with the Receiver Box, UART is used, because this protocol can handle longer cable distances than I²C. The (Receiver box) UART is interfaced via a 15 pin Sub-D connector (VGA connector). Via this UART connection, the F21RE Receiver box and the FM23 Monitor can communicate (via FSP). By doing so, the monitor will know that there is an Receiver box connected and thus it is operating as a TV configuration.

RS232/UART Control

The OTC (SELECT_1 to 4) controls the RS232/UART switches. When the monitor is in Receiver box mode, there is no RS232 communication possible. The monitor is default set in Receiver box mode (switch to n.c. position) and the UART from/to VGA1 is enabled, to allow communication with Receiver box.

If no Receiver box is detected, the UART is disabled to ensure that there will be no communication towards the OTC, and the switch is set to OTC. Below the truth table of the switches is shown, which determine the TXD/RXD path.

Table 9-7 RS232/UART Control

S1 = SELECT_1 (P0)	S2 = SELECT_1 (P1)	S3 = SELECT_1 (P3) ⁽³⁾	S4 = SELECT_4 (P4) ⁽⁴⁾		UART VGA1 (E-box)	UART VGA2 (flex)	RS232 set to OTC ⁽¹⁾	RS232 set to PW ⁽²⁾
0	0	0	0		0	0	0	0
0	0	0	1		0	0	0	0
0	0	1	0		0	0	0	0
0	0	1	1		1	0	0	0
0	1	0	0		0	0	0	0
0	1	0	1		0	0	0	0
0	1	1	0		0	0	0	0
0	1	1	1		1	0	0	0
1	0	0	0		0	0	0	0
1	0	0	1		0	0	1	0
1	0	1	0		0	1	0	0
1	0	1	1		0	0	0	0
1	1	0	0		0	0	0	0
1	1	0	1		0	0	0	1
1	1	1	0		0	1	0	0
1	1	1	1		0	0	0	0

(1) Software download or ComPair mode.

(2) Software download or Debug mode.

(3) When S3 = 1 the 74HCT4052 is in a tri-state ('off' state).

(4) When S4 = 0 the TXD out of RS232 is disabled (S4 may not become low in any other case).

UART Detection

When the VGA1_RXD line is continuously 'low', the OTC might run slow due the fact that so-called 'break' signals are

generated. To prevent this, a small circuitry is added to detect whether VGA1_RXD is continuously 'low' (item 7310).

When the VGA1_RXD line is 'low' for about 20 ms, the buffer-switch (item 7303-A) is opened. After this buffer, a second discrete buffer is placed (items 7315/16), which keeps the RXD_OTC line 'high' and changes the 5 V into a 3.3 V level.

ICONN-box

For application of a Flat TV in a hotel environment, the monitor is designed to operate with a so-called ICONN-Box. The ICONN-box will take over the user control of the monitor, by intercepting the RC5-commands coming from a dedicated RC-transmitter, which sends specific hotel-mode commands and sending its own RC-commands to the microprocessor in the monitor.

So in the ICONN-Box, the hotel-mode commands will be converted to RC5-commands, which than can be interpreted by the monitor.

When connected to the RS232 input, this box takes over the control of the IR-receiver in the monitor. It is also able to control the front LED. The switches (7550 for the IR and 7555 for the LED signals) are controlled by the ICONN_NOT signal.

The ICONN-Box shall interface the Monitor with the following signals:

- **IR-RX.** These are the RC5-commands coming from the specific hotel RC5 - transmitter, which are received via the RC5-receiver of the monitor.
- **IR-TX.** These are the RC5-commands generated by the ICONN-Box and send to the monitor.
- **RL-ICN.** Control signal from the microprocessor (of the monitor), indicating the power state of the monitor. The ICONN-Box and monitor LED are driven in parallel.
- **GL-ICN.** Control signal from the microprocessor (of the monitor), indicating the functionality of the monitor, to drive the LED on the ICONN-Box.
- **LD-ICN.** Control signal from the ICONN-Box to drive the green LED on the monitor.

9.5 Audio Amplifier Panel (Diagram A)

9.5.1 Introduction

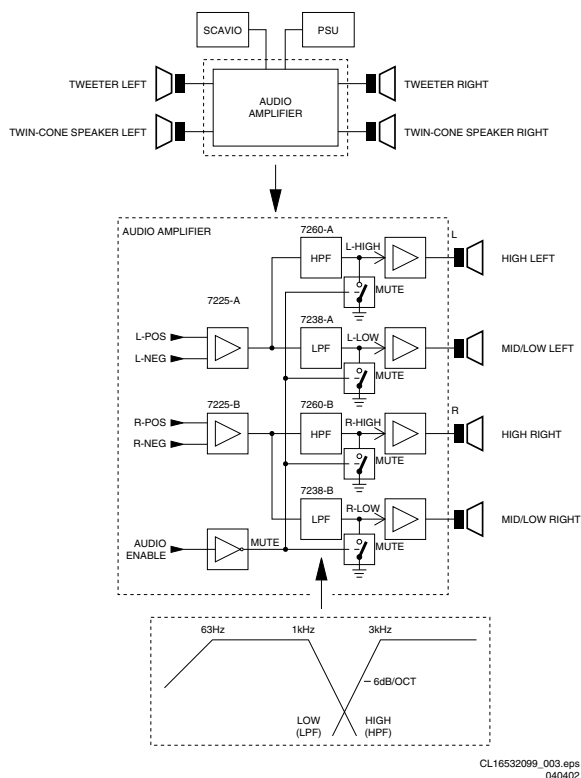


Figure 9-18 Blockdiagram Audio Amplifier

This panel houses the audio filters and amplifiers necessary for driving the speakers. The differential audio inputs (for common mode immunity) come from the SCAVIO panel (via connector 0388).

The PSU delivers the positive and negative supply voltage of 14.5 V_{DC}, as well as the +9V_STBY voltage.

After being filtered and amplified, the signals go to the speaker section, where the (twin cone) low/mid range speakers and the tweeters are driven (load impedance is 8 Ω).

9.5.2 Supply (Diagram A7)

The supply voltage is a symmetrical voltage of +/- 14.5 V_{DC}, generated by the main supply via L5002.

- V_{SND_POS} (+14.5 V_{DC}) on connector 0302 pin 5/6, and
- V_{SND_NEG} (-14.5 V_{DC}) on connector 0302 pin 1/2.

9.5.3 Filter (Diagram A2)

Electrical filtering is needed for following reasons:

- Limiting the cone excursion, thereby reducing the distortion.
- Increasing the power handling capacity (PHC).

In the FM23, active second order Sallen-Key filters are used, with crossover frequencies of 1 kHz for the lowpass filter, and 3 kHz for the highpass filter.

The audio signals are filtered **before** the amplifier. There are some reasons for doing this:

- It is now easy to do active filtering, and
- At less costs (no expensive coils and capacitors).

Low Pass Filter (LPF)

For L and R separately, a Low Pass Filter (IC7238A and B) is processing L_LOW and R_LOW.

The output signal of this filter is then fed to the audio amplifier (identical for right channel).

High Pass Filter (HPF)

For L and R separately, a High Pass Filter (IC7260A and B) is processing L_HIGH and R_HIGH.

The output signal of this filter is then fed to the audio amplifier (identical for right channel).

9.5.4 Amplifier (Diagrams A3 to A6)

Each speaker has its' own 15 W class-D amplifier. These amplifiers combine a good performance with a high efficiency, resulting in a big reduction in heat generation.

Principle

Audio-power-amplifier systems have traditionally used linear amplifiers, which are well known for being inefficient. In fact, a linear Class AB amplifier is designed to act as a variable resistor network between the power supply and the load. The transistors operate in their linear region, and the voltage that is dropped across the transistors (in their role as variable resistors) is lost as heat, particularly in the output transistors. Class D amplifiers were developed as a way to increase the efficiency of audio-power-amplifier systems.

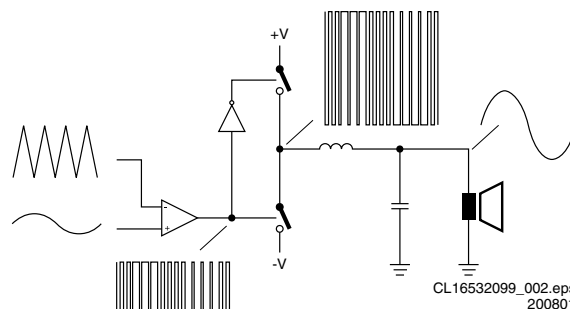


Figure 9-19 Principle Class-D Amplifier

The Class D amplifier works by varying the duty cycle of a Pulse Width Modulated (PWM) signal.

By comparing the input voltage to a triangle wave, the amplifier increases duty cycle to increase output voltage, and decreases duty cycle to decrease output voltage.

The output transistors (item 7365 on diagram A3) of a Class D amplifier switch from 'full off' to 'full on' (saturated) and then back again, spending very little time in the linear region in between. Therefore, very little power is lost to heat. If the transistors have a low 'on' resistance (R_{DS(ON)}), little voltage is dropped across them, further reducing losses.

A Low Pass Filter at the output passes only the average of the output wave, which is an amplified version of the input signal. In order to keep the distortion low, negative feedback is applied (via R3308). A second feedback loop (via R3310) is tapped after the output filter, in order to decrease the distortion at high frequencies.

The **advantage** of Class D is increased efficiency (= less heat dissipation). Class D amplifiers can drive the same output power as a Class AB amplifier using less supply current.

The **disadvantage** is the large output filter that drives up cost and size. The main reason for this filter is that the switching waveform results in maximum current flow. This causes more loss in the load, which causes lower efficiency. An LC filter with a cut-off frequency less than the Class D switching frequency (350 kHz), allows the switching current to flow through the filter instead of the load. The filter is less lossy than the speaker, which causes less power dissipated at high output power and increases efficiency in most cases.

9.5.5 Mute (Diagram A2 to A6)

A mute switch (item 7302) is provided at the PWM inputs (item 7315, LM311). This switch is controlled by the AUDIO_ENABLE line, which checks the availability of the +9V_STBY voltage.

9.5.6 Protections

Short-circuit Protection (Diagram A3)

A protection is made against a too high temperature of transistor 7355 in case of a short-circuit of output FET 7365-1. Transistor 7340 is sensing the current through transistor 7355 via R3355, and activates the DC-protection line (see below) in case the current becomes too high. This is the same for all four amplifier parts.

DC-protection (Diagram A7)

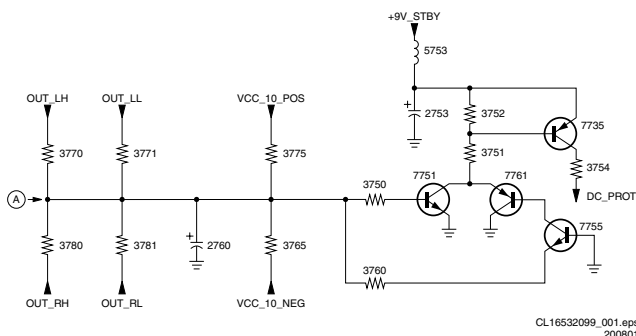


Figure 9-20 DC Protection

Because of the symmetrical supply, a DC-blocking capacitor, between the amplifier and the speaker, is not necessary. However, it is still necessary to protect the speaker for DC voltages.

The following protections are therefore implemented:

- Via R3765 and R3775, each stabilised supply voltage line (via items 7735 and 7745) is checked on deviations.
- Via R3770/3771/3780/3781, each amplifier output is checked for DC-voltage.

Via R3765/3775, a virtual earth is imposed on point A. When one of the supply voltages deviates, a DC voltage will occur on this point. If point A is positive, T7751 will conduct. If it is negative, T7761 will conduct.

Both cases will make T7735 conduct, so that the DC-PROT signal will be made high. This ensures that the power supply is rapidly trimmed back.

Capacitor C2760 will ensure that only DC-signals at point A will activate the protection.

9.6 LED/Switch Panel (Diagram LD)

This panel contains:

- The red and green status LEDs,
- The RC input receiver,
- The light sensor, and
- The 'on/off' switch.

All signals on this panel come directly from the SCAVIO panel:

- The LED and sensor signals (RED_LED, GREEN_LED and LIGHT_SEN_IN) are routed to the OTC. When a F21RE Receiver box is connected, the sensor signal is routed to the OTC of this box (via UART), where it will control the HOP via I²C.
- The RC signal (RC_IN) is routed to the OTC, the VGA1 connector, and the RC-out cinch connector.
- The signals to (+9V_STBY) and from (+9V_STBY_SW) the 'on/off' switch are routed to the PSU board.

9.7 Plasma Display Panel (PDP)

9.7.1 General

The PDP, which is used in the FM23, is a product of Fujitsu Hitachi Plasma Display Ltd (FHP). When defect, a new panel must be ordered, and after receipt, the defective panel must be sent for repair in the packing (flight case) of the new ordered panel.

9.7.2 Operation

Principle

Plasma displays work by applying a voltage between two transparent display electrodes on the front glass plate of the display. The electrodes are separated by an MgO dielectric layer and surrounded by a mixture of neon and xenon gases. When the voltage reaches the 'firing level', a plasma discharge occurs on the surface of the dielectric, resulting in the emission of ultra violet light.

This UV light then excites the phosphor material at the back of the cell and emits visible light. Each cell or sub-pixel has red, blue or green phosphor material and three sub-pixels combine to make up a pixel. The intensity of each colour is controlled by varying the number and width of voltage pulses applied to the sub-pixel during a picture frame. This is implemented by dividing each picture frame into sub-frames. During a sub-frame, all cells are first addressed - those to be lit are pre-charged to a specific address voltage - then during the display time the display voltage is applied to the entire screen lighting those that were addressed.

Each sub-frame has a weighting ranging from 1 time unit to 128 time units for a typical eight sub-frame arrangement (Time Unit depends on size and number of pixels on the screen). This is a purely digital PWM control mechanism, which is a key advantage as it eliminates any unnecessary digital to analogue conversions, making the PDP technology ideal for the all-digital age.

Achieving High Resolution

While conventional technology, as found in standard VGA resolution screens, uses 2 display electrodes for each horizontal line, applying the same method to achieve higher resolution (>1000 horizontal lines) brings inherent problems. Firstly, the number of electrodes would need to be doubled which would require very high precision production processes. Secondly, the cell aperture ratio would reduce resulting in lower brightness. In addition, either the driving scheme would have to operate with double the speed, again introducing significantly higher cost, or a dual-scan technique would have to be introduced. With dual-scan, twice as many driving ICs would be required. In summary, implementing high resolution with conventional technology would result in lower brightness and increased costs.

ALiS Technology

To achieve high brightness as well as cost-effectiveness, FHP developed ALiS (Alternate Lighting of Surfaces) Technology. ALiS is based on 3 principles:

- Odd and Even lines are displayed separately
- The non-lighting area between the cells is utilised
- The number of electrodes = the number of horizontal display lines + 1

Despite the smaller cell size, the aperture ratio can be increased from 40% to 65% meaning that the screen is inherently brighter. Another spin-off benefit is that the lighting duty is reduced to 50% (odd fields and even fields lit for half of each frame) meaning that a significantly improved phosphor lifetime can be expected.

For more information, see <http://www.fme.fujitsu.com/products/plasma/01.html>

9.8 Abbreviation list

ADC	Analogue to Digital Converter	NTC	Negative Temperature Coefficient, non-linear resistor
ALIS	Alternate Lighting of Surfaces, new plasma display technology	NTSC	National Television Standard Committee. Colour system mainly used in North America and Japan. Colour carrier NTSC M/N = 3.579545 MHz, NTSC 4.43 = 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)
AM	Amplitude Modulation	NVM	Non Volatile Memory: IC containing TV related data e.g. alignments
AP	Asia Pacific	OC	Open Circuit
AV	External Audio Video	OSD	On Screen Display
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz	OTC	On screen display, Teletext and Control
BGA	Ball Grid Array	P50	Project 50 or Easy Link
BTSC	Broadcast Television Standard Committee. Multiplex FM stereo sound system, originating from the USA and used e.g. in LATAM and AP-NTSC countries	PAL	Phase Alternating Line. Colour system mainly used in West Europe (colour carrier = 4.433619 MHz) and South America (colour carrier PAL M = 3.575612 MHz and PAL N = 3.582056 MHz)
ComPair	Computer aided rePair	PCB	Printed Circuit Board
CVBS	Composite Video Blanking and Synchronisation	PCM	Pulse Code Modulation
DAC	Digital to Analogue Converter	PDP	Plasma Display Panel
DDC	Display Data Channel (a protocol based on I2C)	PFC	Power Factor Corrector (or Pre-conditioner)
D/K	Monochrome TV system. Sound carrier distance is 6.5 MHz	PIP	Picture In Picture
DFU	Direction For Use: description for the end user	PLL	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency
DNR	Dynamic Noise Reduction	POR	Power On Reset, signal to reset the P Scan mode, where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.
DRAM	Dynamic RAM	Progressive Scan	
DSP	Digital Signal Processing	PTC	Positive Temperature Coefficient, non linear resistor
DTS	Digital Theatre Sound	PW	Pixel Works (manufacturer) video scaling co-processor
DVD	Digital Versatile Disc	PWM	Pulse Width Modulation
DVI-d	Digital Visual Interface, d = digital only	RAM	Random Access Memory
EEPROM	Electrically Erasable and Programmable Read Only Memory	RC	Remote Control handset
EMI	Electro Magnetic Interference	RC5	Remote Control system 5, signal from the remote control receiver
EPLD	Erasable Programmable Logic Device	RGB	Red Green Blue
EU	Europe	ROM	Read Only Memory
EXT	External (source), entering the set via SCART or Cinch	SCART	Syndicat des Constructeurs d'Appareils Radiorecepteurs et Televisieurs
FLASH	Flash memory	SCAVIO	Scaler Control Audio Video Input and Output
FM	Frequency Modulation	SCL	Serial Clock I2C
FSP	FTV System Protocol	SDA	Serial Data I2C
FTV	Flat TeleVision	SDRAM	Synchronous DRAM
HP	Headphone	SECAM	SEquence Couleur Avec Memoire. Colour system mainly used in France and East Europe. Colour carriers = 4.406250 MHz and 4.250000 MHz
I	Monochrome TV system. Sound carrier distance is 6.0 MHz	SMPS	Switched Mode Power Supply
I ² C	Integrated IC bus	SOG	Sync On Green
I ² S	Integrated IC Sound bus	SOPS	Self Oscillating Power Supply
ICONN	Institutional CONNector	S/PDIF	Sony Philips Digital InterFace
IF	Intermediate Frequency	SRAM	Static RAM
Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in 'pairs', causing line flicker.	STBY	Standby
IR	Infra Red	SVHS	Super Video Home System
IRQ	Interrupt Request	SW	Software
LATAM	Latin America	SXGA	1280x1024
LED	Light Emitting Diode	THD	Total Harmonic Distortion
L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I	TMD5	Transition Minimised Differential Signalling
LS	Loudspeaker	TXT	Teletext
LVDS	Low Voltage Differential Signalling	UART	Universal Asynchronous Receiver Transmitter, 2-wire bus which can handle longer cables than I2C.
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz		
MOSFET	Metal Oxide Silicon Field Effect Transistor, switching device		
MPEG	Motion Pictures Experts Group		
NC	Not Connected		
NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe.		

P	Microprocessor
VCR	Video Cassette Recorder
Va	Addressing voltage for the plasma display
Vra	Setting voltage for Va
Vrs	Setting voltage for Vs
Vs	Sustain voltage for the plasma display
Y/C	Luminance (Y) and Chrominance (C) signal
YUV	Component video
0/6/12	SCART switch control signal on A/V board. 0 = loop through (AUX to TV), 6 = play 16:9 format, 12 = play 4:3 format

9.9 IC Data

In this paragraph, the internal block diagrams and pinning are given of ICs that are drawn as a ‘black box’ in the electrical diagrams (with exception of ‘memory’ and ‘logic’ ICs).

9.9.1 Diagram P2, TNY256 (IC7500)

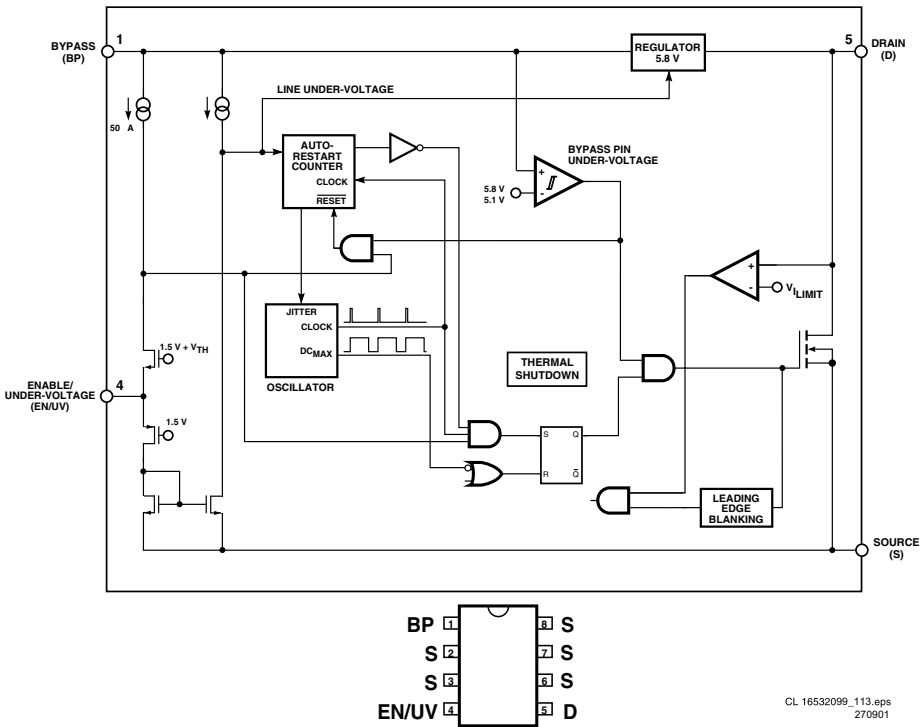


Figure 9-21 Internal Block Diagram and pinning TNY256

9.9.2 Diagram P5, MC33368 (IC7650)

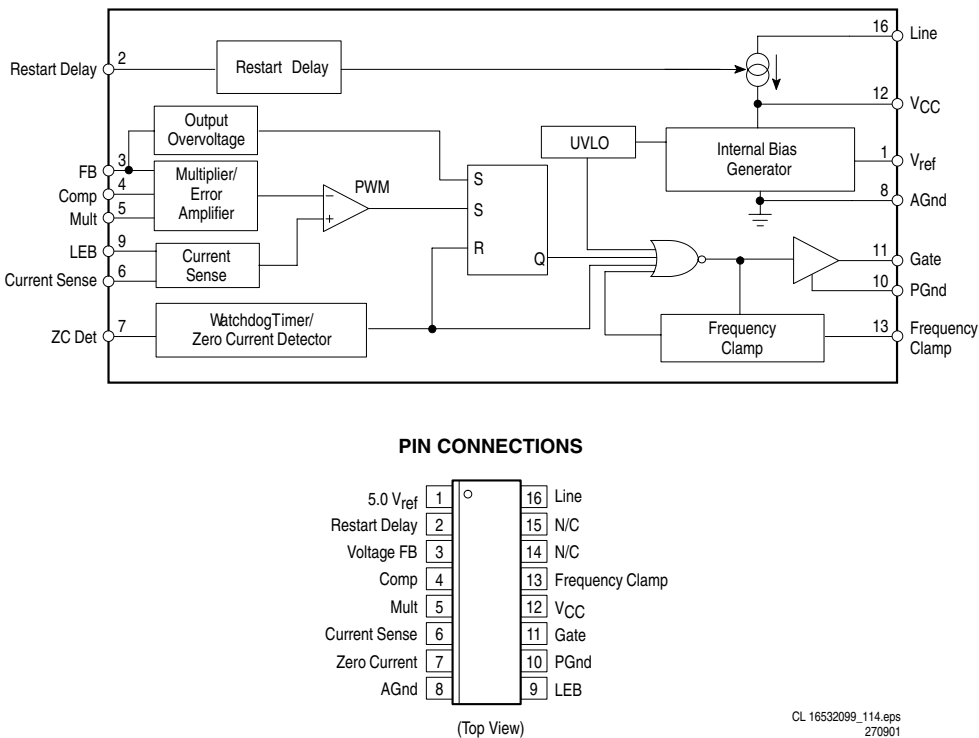
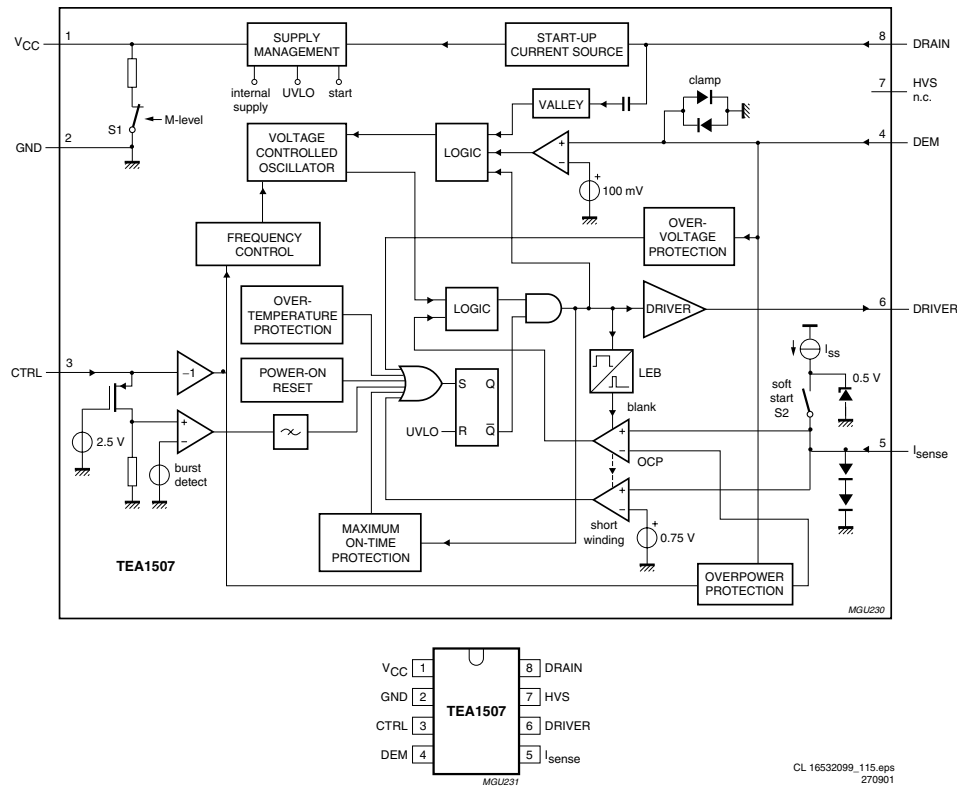
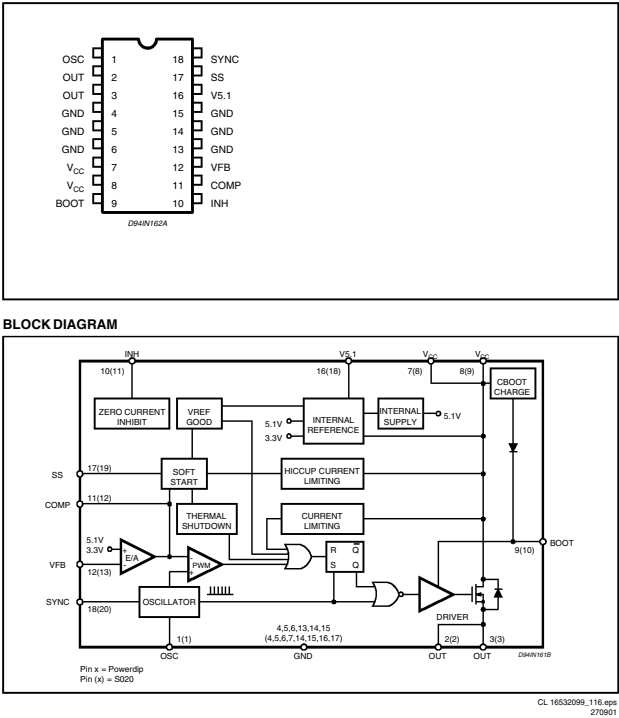


Figure 9-22 Internal Block Diagram and pinning MC33368

9.9.3 Diagram P7, TEA1507 (IC7112 and IC7212)



9.9.4 Diagram P7, L4973V (IC7260)



9.9.5 Diagram SC2, LM1881M (7040)

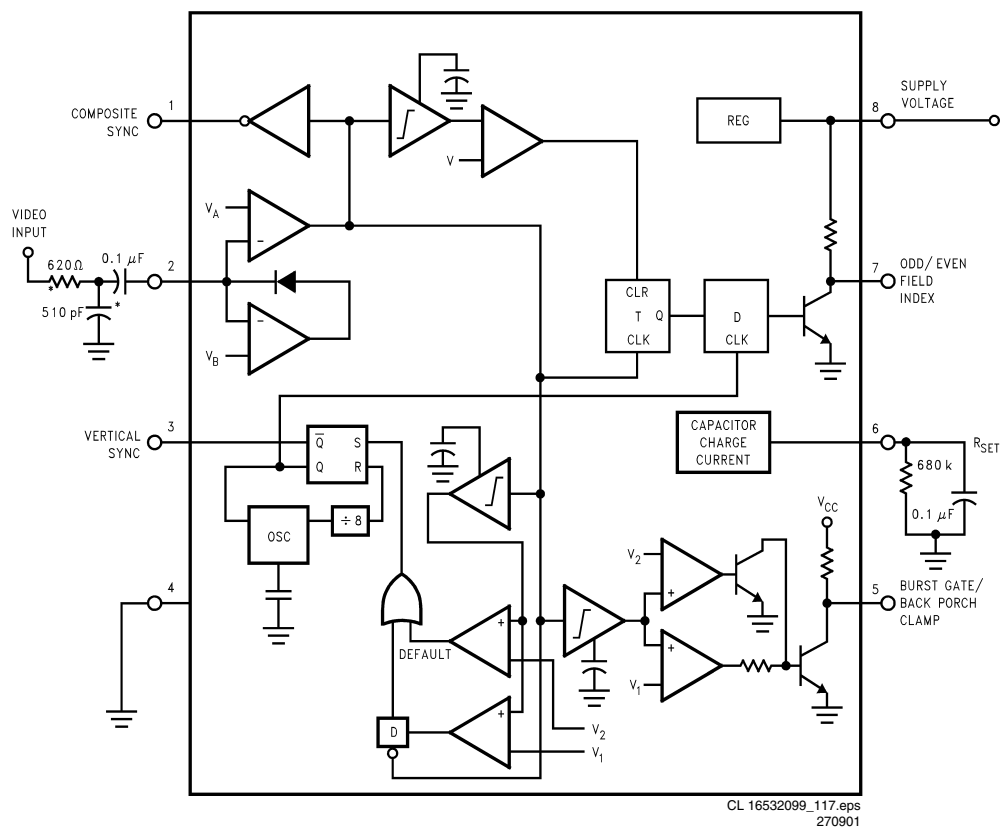


Figure 9-25 Internal Block Diagram and pinning LM1881

9.9.6 Diagram SP2, PCF8591 (7530)

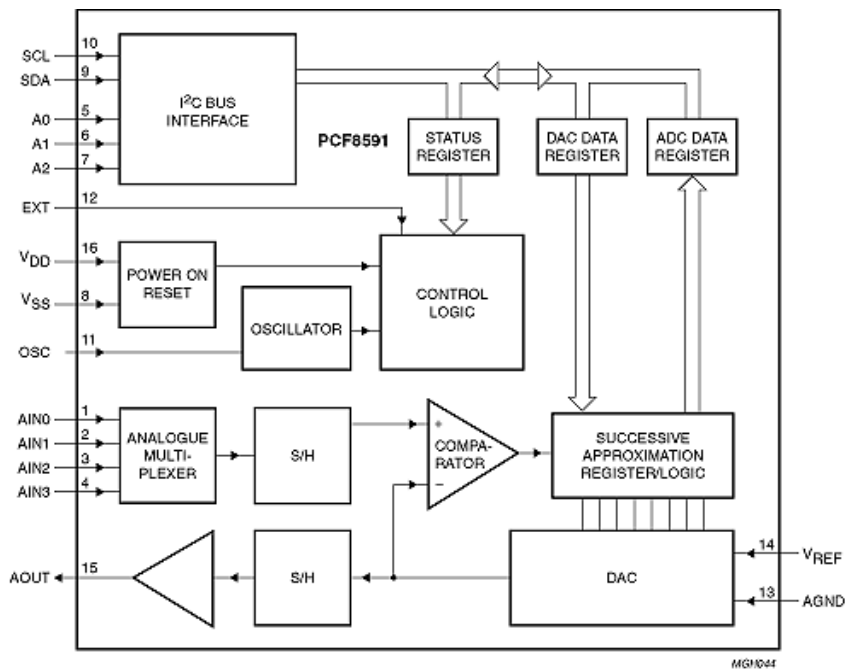


Figure 9-26 Internal Block Diagram PCF8591

10. Spare Parts List

Audio Amplifier [A]

Various

0302	2422 025 16846	9P male hor.
0303	2422 025 16702	5P male hor.
0304	2422 025 16543	4P male hor.
0388	2422 025 16703	7P male hor.
0388	2422 025 16704	8P male hor.
1730	4822 071 52502	Fuse 2.5A
1730	4822 253 50137	Fuse 2,5A UL
1740	4822 071 52502	Fuse 2.5A
1740	4822 253 50137	Fuse 2,5A UL

—II—

2201	4822 126 13193	4.7nF 10% 63V
2202	4822 124 23002	10µF 16V
2204	4822 126 14226	82pF 5% 50V 0603
2205	4822 126 13193	4.7nF 10% 63V
2206	4822 124 23002	10µF 16V
2207	4822 126 14226	82pF 5% 50V 0603
2212	5322 126 11578	1nF 10% 50V 0603
2215	4822 126 13193	4.7nF 10% 63V
2216	4822 124 23002	10µF 16V
2218	4822 126 14226	82pF 5% 50V 0603
2220	4822 126 13193	4.7nF 10% 63V
2221	4822 124 23002	10µF 16V
2222	4822 126 14226	82pF 5% 50V 0603
2224	4822 126 14305	100nF 10% 16V 0603
2225	4822 126 14305	100nF 10% 16V 0603
2233	3198 017 31530	15nF 50V
2233	3198 017 36830	68nF 16V
2233	5322 126 11582	6.8nF 10% 63V
2234	2238 586 59812	100nF 80-20% 50V
2234	3198 017 31530	15nF 50V
2234	4822 126 14494	22nF 10% 25V 0603
2238	4822 126 14305	100nF 10% 16V 0603
2239	4822 126 14305	100nF 10% 16V 0603
2243	3198 017 31530	15nF 50V
2243	3198 017 36830	68nF 16V
2243	5322 126 11582	6.8nF 10% 63V
2244	2238 586 59812	100nF 80-20% 50V
2244	3198 017 31530	15nF 50V
2244	4822 126 14494	22nF 10% 25V 0603
2255	4822 126 13193	4.7nF 10% 63V
2255	4822 126 14494	22nF 10% 25V 0603
2256	4822 126 13193	4.7nF 10% 63V
2256	4822 126 14494	22nF 10% 25V 0603
2260	4822 126 14305	100nF 10% 16V 0603
2261	4822 126 14305	100nF 10% 16V 0603
2270	4822 126 13193	4.7nF 10% 63V
2270	4822 126 14494	22nF 10% 25V 0603
2271	4822 126 13193	4.7nF 10% 63V
2271	4822 126 14494	22nF 10% 25V 0603
2309	4822 126 14247	1.5nF 50V
2310	4822 126 14226	82pF 5% 50V 0603
2315	4822 124 12084	1µF 20% 50V
2315	4822 124 23002	10µF 16V
2316	4822 126 14305	100nF 10% 16V 0603
2318	4822 126 14305	100nF 10% 16V 0603
2319	4822 124 12084	1µF 20% 50V
2319	4822 124 23002	10µF 16V
2330	4822 126 14305	100nF 10% 16V 0603
2334	2020 012 93764	220µF 20% 35V
2335	4822 126 14305	100nF 10% 16V 0603
2339	4822 126 14305	100nF 10% 16V 0603
2360	2020 012 93764	220µF 20% 35V
2365	2020 552 96326	220nF 10% 16V
2366	2020 552 96326	220nF 10% 16V
2409	4822 126 14247	1.5nF 50V
2410	4822 126 14226	82pF 5% 50V 0603
2415	4822 124 12084	1µF 20% 50V
2415	4822 124 23002	10µF 16V
2416	4822 126 14305	100nF 10% 16V 0603
2418	4822 126 14305	100nF 10% 16V 0603
2419	4822 124 12084	1µF 20% 50V
2419	4822 124 23002	10µF 16V
2430	4822 126 14305	100nF 10% 16V 0603
2434	2020 012 93764	220µF 20% 35V
2435	4822 126 14305	100nF 10% 16V 0603
2440	5322 126 11583	10nF 10% 50V 0603
2455	4822 126 14305	100nF 10% 16V 0603
2459	4822 126 14305	100nF 10% 16V 0603
2460	2020 012 93764	220µF 20% 35V
2465	2020 552 96326	220nF 10% 16V

2466	2020 552 96326	220nF 10% 16V
2509	4822 126 14247	1.5nF 50V
2510	4822 126 14226	82pF 5% 50V 0603
2515	4822 124 12084	1µF 20% 50V
2515	4822 124 23002	10µF 16V
2516	4822 126 14305	100nF 10% 16V 0603
2518	4822 126 14305	100nF 10% 16V 0603
2519	4822 124 12084	1µF 20% 50V
2519	4822 124 23002	10µF 16V
2530	4822 126 14305	100nF 10% 16V 0603
2534	2020 012 93764	220µF 20% 35V
2535	4822 126 14305	100nF 10% 16V 0603
2540	5322 126 11583	10nF 10% 50V 0603
2555	4822 126 14305	100nF 10% 16V 0603
2559	4822 126 14305	100nF 10% 16V 0603
2560	2020 012 93764	220µF 20% 35V
2565	2020 552 96326	220nF 10% 16V
2566	2020 552 96326	220nF 10% 16V
2609	4822 126 14247	1.5nF 50V
2610	4822 126 14226	82pF 5% 50V 0603
2615	4822 124 12084	1µF 20% 50V
2615	4822 124 23002	10µF 16V
2616	4822 126 14305	100nF 10% 16V 0603
2618	4822 126 14305	100nF 10% 16V 0603
2619	4822 124 12084	1µF 20% 50V
2619	4822 124 23002	10µF 16V
2630	4822 126 14305	100nF 10% 16V 0603
2634	2020 012 93764	220µF 20% 35V
2635	4822 126 14305	100nF 10% 16V 0603
2640	5322 126 11583	10nF 10% 50V 0603
2655	4822 126 14305	100nF 10% 16V 0603
2659	4822 126 14305	100nF 10% 16V 0603
2660	2020 012 93764	220µF 20% 35V
2665	2020 552 96326	220nF 10% 16V
2666	2020 552 96326	220nF 10% 16V
2730	2020 012 93764	220µF 20% 35V
2732	2020 012 93764	220µF 20% 35V
2733	4822 124 23002	10µF 16V
2734	4822 124 12084	1µF 20% 50V
2734	4822 124 23002	10µF 16V
2740	2020 012 93764	220µF 20% 35V
2742	2020 012 93764	220µF 20% 35V
2743	4822 124 23002	10µF 16V
2744	4822 124 12084	1µF 20% 50V
2744	4822 124 23002	10µF 16V
2752	4822 124 23002	10µF 16V
2753	4822 124 23002	10µF 16V
2759	5322 126 11578	1nF 10% 50V 0603
2760	5322 124 11945	22µF 20% 35V
2770	5322 126 11578	1nF 10% 50V 0603
2771	5322 126 11578	1nF 10% 50V 0603
2780	5322 126 11578	1nF 10% 50V 0603
2781	5322 126 11578	1nF 10% 50V 0603
2799	5322 126 11583	10nF 10% 50V 0603

—III—

3201	4822 051 30221	220Ω 5% 0.062W
3202	4822 051 30102	1k 5% 0.062W
3203	4822 051 30272	2k7 5% 0.062W
3203	4822 051 30332	3k3 5% 0.062W
3205	4822 051 30221	220Ω 5% 0.062W
3206	4822 051 30102	1k 5% 0.062W
3207	4822 051 30272	2k7 5% 0.062W
3207	4822 051 30332	3k3 5% 0.062W
3210	4822 051 30333	33k 5% 0.062W
3211	4822 117 13632	100k 1% 0.62W 0603
3215	4822 051 30221	220Ω 5% 0.062W
3216	4822 051 30102	1k 5% 0.062W
3217	4822 051 30272	2k7 5% 0.062W
3217	4822 051 30332	3k3 5% 0.062W
3220	4822 051 30221	220Ω 5% 0.062W
3221	4822 051 30102	1k 5% 0.062W
3222	4822 051 30272	2k7 5% 0.062W
3222	4822 051 30332	3k3 5% 0.062W
3230	4822 051 30101	100Ω 5% 0.062W
3231	4822 051 30103	10k 5% 0.062W
3231	4822 051 30222	2k2 5% 0.062W
3232	4822 051 30103	10k 5% 0.062W
3232	4822 051 30152	1k5 5% 0.062W
3232	4822 051 30682	6k8 5% 0.062W
3233	4822 051 30103	10k 5% 0.062W
3233	4822 051 30222	2k2 5% 0.062W
3234	4822 051 30272	2k7 5% 0.062W
3234	4822 051 30561	560Ω 5% 0.062W
3234	4822 117 12917	1Ω 5% 0.062W
3240	4822 051 30101	100Ω 5% 0.062W
3241	4822 051 30103	10k 5% 0.062W
3241	4822 051 30222	2k2 5% 0.062W

3242	4822 051 30103	10k 5% 0.062W
3242	4822 051 30152	1k5 5% 0.062W
3242	4822 051 30682	6k8 5% 0.062W
3243	4822 051 30103	10k 5% 0.062W
3243	4822 051 30222	2k2 5% 0.062W
3244	4822 051 30272	2k7 5% 0.062W
3244	4822 051 30561	560Ω 5% 0.062W
3244	4822 117 12917	1Ω 5% 0.062W
3255	4822 051 30562	5k6 5% 0.063W
3255	4822 117 11817	1k2 1% 0.062W
3256	4822 051 30153	15k 5% 0.062W
3256	4822 051 30332	3k3 5% 0.062W
3257	4822 051 30222	2k2 5% 0.062W
3257	4822 051 30471	470Ω 5% 0.062W
3259	4822 117 12917	1Ω 5% 0.062W
3270	4822 051 30562	5k6 5% 0.063W
3270	4822 117 11817	1k2 1% 0.062W
3271	4822 051 30153	15k 5% 0.062W
3271	4822 051 30332	3k3 5% 0.062W
3272	4822 051 30222	2k2 5% 0.062W
3272	4822 051 30471	470Ω 5% 0.062W
3274	4822 117 12917	1Ω 5% 0.062W
3301	4822 117 12902	8k2 1% 0.063W 0603
3302	4822 051 30103	10k 5% 0.062W
3306	4822 117 12903	1k8 1% 0.063W
3307	4822 117 13632	100k 1% 0.62W 0603
3308	4822 117 13632	100k 1% 0.62W 0603
3309	4822 051 30181	180Ω 5% 0.062W
3310	4822 117 12864	82k 5% 0.6W
3311	4822 051 30682	6k8 5% 0.062W
3315	5322 117 11726	10Ω 5%
3318	5322 117 11726	10Ω 5%
3325	4822 117 11449	2k2 5% 0.1W 0805
3327	4822 117 11449	2k2 5% 0.1W 0805
3328	4822 051 30102	1k 5% 0.062W
3330	5322 117 11726	10Ω 5%
3336	4822 051 30475	4M7 5% 0.062W
3336	4822 117 12891	220k 1%
3337	5322 117 11726	10Ω 5%
3340	4822 051 30103	10k 5% 0.062W
3355	5322 117 11726	10Ω 5%
3361	4822 051 30475	4M7 5% 0.062W
3361	4822 117 12891	220k 1%
3362	5322 117 11726	10Ω 5%
3401	4822 117 12902	8k2 1% 0.063W 0603
3402	4822 051 30103	10k 5% 0.062W
3406	4822 117 12903	1k8 1% 0.063W 0603
3407	4822 117 13632	100k 1% 0.62W 0603
3408	4822 117 13632	100k 1% 0.62W 0603
3409	4822 051 30181	180Ω 5% 0.062W
3410	4822 117 12864	82k 5% 0.6W
3411	4822 051 30153	15k 5% 0.062W
3415	5322 117 11726	10Ω 5%
3418	5322 117 11726	10Ω 5%
3425	4822 117 11449	2k2 5% 0.1W 0805
3427	4822 117 11449	2k2 5% 0.1W 0805
3428	4822 051 30102	1k 5% 0.062W
3430	5322 117 11726	10Ω 5%
3436	4822 051 30475	4M7 5% 0.062W
3436	4822 117 12891	220k 1%
3437	5322 117 11726	10Ω 5%
3440	4822 051 30103	10k 5% 0.062W
3455	5322 117 11726	10Ω 5%
3461	4822 051 30475	4M7 5% 0.062W
3461	4822 117 12891	220k 1%
3462	5322 117 11726	10Ω 5%
3501	4822 117 12902	8k2 1% 0.063W
3502	4822 051 30103	10k 5% 0.062W
3506	4822 117 12903	1k8 1% 0.063W
3507	4822 117 13632	100k 1% 0.62W
3508	4822 117 13632	100k 1% 0.62W
3509	4822 051 30181	180Ω 5% 0.062W
3510	4822 117 12864	82k 5% 0.6W
3511	4822 051 30682	6k8 5% 0.062W
3515	5322 117 11726	10Ω 5%
3518	5322 117 11726	10Ω 5%
3525	4822 117 11449	2k2 5% 0.1W 0805
3527	4822 117 11449	2k2 5% 0.1W 0805
3528	4822 051 30102	1k 5% 0.062W
3530	5322 117 11726	10Ω 5%
3536	4822 051 30475	4M7 5% 0.062W
3536	4822 117 12891	220k 1%
3537	5322 117 11726	10Ω 5%
3540	4822 051 30103	10k 5% 0.062W
3555	5322 117 11726	10Ω 5%
3561	4822 051 30475	4M7 5% 0.062W
3561	4822 117 12891	220k 1%
3562	5322 117 11726	10Ω 5%
3601	4822 117 12902	8k2 1% 0.063W

3602	4822 051 30103	10k 5% 0.062W
3606	4822 117 12903	1k8 1% 0.063W
3607	4822 117 13632	100k 1% 0.62W
3608	4822 117 13632	100k 1% 0.62W
3609	4822 051 30181	180Ω 5% 0.062W
3610	4822 117 12864	82k 5% 0.6W
3611	4822 051 30153	15k 5% 0.062W
3615	5322 117 11726	10Ω 5%
3618	5322 117 11726	10Ω 5%
3625	4822 117 11449	2k2 5% 0.1W 0805
3627	4822 117 11449	2k2 5% 0.1W 0805
3628	4822 051 30102	1k 5% 0.062W
3630	5322 117 11726	10Ω 5%
3636	4822 051 30475	4M7 5% 0.062W
3636	4822 117 12891	220k 1%
3637	5322 117 11726	10Ω 5%
3640	4822 051 30103	10k 5% 0.062W
3655	5322 117 11726	10Ω 5%
3661	4822 051 30475	4M7 5% 0.062W
3661	4822 117 12891	220k 1%
3662	5322 117 11726	10Ω 5%
3732	4822 051 30152	1k5 5% 0.062W
3732	4822 051 30272	2k7 5% 0.062W
3733	4822 051 30102	1k 5% 0.062W
3733	4822 051 30221	220Ω 5% 0.062W
3742	4822 051 30152	1k5 5% 0.062W
3742	4822 051 30272	2k7 5% 0.062W
3743	4822 051 30102	1k 5% 0.062W
3743	4822 051 30221	220Ω 5% 0.062W
3749	4822 051 30103	10k 5% 0.062W
3750	4822 051 30471	470Ω 5% 0.062W
3751	4822 117 12925	47k 1% 0.063W
3752	4822 117 12925	47k 1% 0.063W
3754	4822 051 30102	1k 5% 0.062W
3755	4822 117 13632	100k 1% 0.62W
3760	4822 051 30471	470Ω 5% 0.062W
3765	4822 117 13632	100k 1% 0.62W
3770	4822 117 13632	100k 1% 0.62W
3771	4822 117 13632	100k 1% 0.62W
3780	4822 117 13632	100k 1% 0.62W
3781	4822 117 13632	100k 1% 0.62W



5335	4822 157 11717	Bead 100MHz 50Ω
5360	4822 157 11717	Bead 100MHz 50Ω
5365	2422 536 00338	33μH 10%
5435	4822 157 11717	Bead 100MHz 50Ω
5460	4822 157 11717	Bead 100MHz 50Ω
5465	2422 536 00338	33μH 10%
5535	4822 157 11717	Bead 100MHz 50Ω
5560	4822 157 11717	Bead 100MHz 50Ω
5565	2422 536 00338	33μH 10%
5635	4822 157 11717	Bead 100MHz 50Ω
5660	4822 157 11717	Bead 100MHz 50Ω
5665	2422 536 00338	33μH 10%
5714	4822 157 11717	Bead 100MHz 50Ω
5719	4822 157 11717	Bead 100MHz 50Ω
5725	4822 157 11717	Bead 100MHz 50Ω
5753	2422 549 43769	Bead 100MHz 30Ω



6328	4822 130 11397	BAS316
6334	4822 130 11148	UDZ4.7B
6335	4822 130 11148	UDZ4.7B
6355	4822 130 11148	UDZ4.7B
6356	4822 130 11148	UDZ4.7B
6359	4822 130 11148	UDZ4.7B
6360	4822 130 11148	UDZ4.7B
6428	4822 130 11397	BAS316
6434	4822 130 11148	UDZ4.7B
6435	4822 130 11148	UDZ4.7B
6455	4822 130 11148	UDZ4.7B
6456	4822 130 11148	UDZ4.7B
6459	4822 130 11148	UDZ4.7B
6460	4822 130 11148	UDZ4.7B
6528	4822 130 11397	BAS316
6534	4822 130 11148	UDZ4.7B
6535	4822 130 11148	UDZ4.7B
6555	4822 130 11148	UDZ4.7B
6556	4822 130 11148	UDZ4.7B
6559	4822 130 11148	UDZ4.7B
6560	4822 130 11148	UDZ4.7B
6628	4822 130 11397	BAS316
6634	4822 130 11148	UDZ4.7B
6635	4822 130 11148	UDZ4.7B
6655	4822 130 11148	UDZ4.7B
6656	4822 130 11148	UDZ4.7B
6659	4822 130 11148	UDZ4.7B
6660	4822 130 11148	UDZ4.7B
6732	4822 130 11551	UDZS10B

6742	4822 130 11551	UDZS10B
6750	4822 130 10328	BAV99W
6760	4822 130 10328	BAV99W



7211	5322 130 42756	BC857C
7225	4822 209 30095	LM833D
7238	4822 209 30095	LM833D
7260	4822 209 30095	LM833D
7302	3198 010 42310	BC847BW
7315	9338 028 20668	LM311D
7330	4822 130 42804	BC817-25
7340	3198 010 42310	BC847BW
7355	5322 130 60845	BC807-25
7365	9322 161 86668	IRF7343
7402	3198 010 42310	BC847BW
7415	9338 028 20668	LM311D
7430	4822 130 42804	BC817-25
7440	3198 010 42310	BC847BW
7455	5322 130 60845	BC807-25
7465	9322 161 86668	IRF7343
7502	3198 010 42310	BC847BW
7515	9338 028 20668	LM311D
7530	4822 130 42804	BC817-25
7540	3198 010 42310	BC847BW
7555	5322 130 60845	BC807-25
7565	9322 161 86668	IRF7343
7602	3198 010 42310	BC847BW
7615	9338 028 20668	LM311D
7630	4822 130 42804	BC817-25
7640	3198 010 42310	BC847BW
7655	5322 130 60845	BC807-25
7665	9322 161 86668	IRF7343
7735	4822 130 60142	BC869
7735	9322 168 88668	LM317D2T
7736	3198 010 42310	BC847BW
7745	5322 130 61569	BC868
7745	9322 150 89668	LM337D2T
7746	5322 130 42756	BC857C
7751	3198 010 42310	BC847BW
7753	5322 130 42756	BC857C
7755	3198 010 42310	BC847BW
7761	5322 130 42756	BC857C

L/Switch Panel [LD]

Various

0317	2422 025 13369	Socket 6P (ICON)
0320	2422 025 16545	10P male hor.
1101	2422 128 02927	Switch push 2P



2107	4822 124 12095	100μF 20% 16V
2120	2020 024 90166	10μF 20% 35V
2126	2020 552 96326	220nF 10% 16V



3101	4822 051 30151	150Ω 5% 0.062W
3102	4822 117 13632	100k 1% 0.62W 0603
3103	4822 051 30102	1k 5% 0.062W
3103	4822 051 30221	220Ω 5% 0.062W
3104	4822 117 13632	100k 1% 0.62W 0603
3105	4822 051 30102	1k 5% 0.062W
3105	4822 051 30331	330Ω 5% 0.062W
3106	4822 051 30151	150Ω 5% 0.062W
3107	4822 051 30471	470Ω 5% 0.062W
3108	4822 051 30103	10k 5% 0.062W
3109	4822 051 30101	100Ω 5% 0.062W
3120	4822 051 30472	4k7 5% 0.062W
3121	4822 051 30472	4k7 5% 0.062W
3122	4822 051 30102	1k 5% 0.062W
3123	4822 051 30103	10k 5% 0.062W
3124	4822 051 30102	1k 5% 0.062W
3125	4822 051 30332	3k3 5% 0.062W
3126	4822 051 30474	470k 5% 0.062W
3127	4822 051 30474	470k 5% 0.062W



5100	2422 549 43769	Bead 100MHz 30Ω
------	----------------	-----------------



6101	4822 130 11564	UDZ3.9B
6103	4822 130 83915	TLMV3100

6105	4822 130 11564	UDZ3.9B
6127	9322 140 63685	Opt. sensor TEMD5000



7103	5322 130 42756	BC857C
7103	9340 218 50115	BC857BW
7105	5322 130 42756	BC857C
7105	9340 218 50115	BC857BW
7107	9322 155 82667	IR receiver TSOP2236
7107	9322 155 98667	IR receiver TSOP2236YA1
7107	9322 178 03667	TSOP2136YA1
7120	5322 209 82941	LM358D

Power Supply [P]

Various

0006	4822 265 11253	Fuse holder 2P
0008	4822 265 11253	Fuse holder 2P
0010	3122 421 60171	Spring
0011	3122 421 60171	Spring
0015	4822 695 00005	Insulating plate
0016	3122 121 67211	Clip MAX247 FT23
0017	3122 121 67201	Clip large GBU
0018	3122 121 67201	Clip large GBU
0020	3122 121 67191	Clip small
0021	3122 121 67191	Clip small
0022	3122 121 67191	Clip small
0023	3122 121 67191	Clip small
0024	3122 121 67191	Clip small
0025	3122 121 67191	Clip small
0041	3122 124 36011	Thermo foam sheet
0205	3104 308 78231	Cooling clip TO-220
0206	3104 308 78231	Cooling clip TO-220
0302	2422 025 10769	9P male vert 2.00
0305	2422 025 10772	12P male vert 2.00
0306	2422 025 08149	6P male vert 2.00
0307	2422 025 17154	20P female vert
0308	4822 265 20723	2P male 7.92
0319	2422 025 10668	13P male vert 2.00
0323	2422 025 15085	10P male vert 3.96
0333	2422 025 12827	9P male vert 3.96
0342	4822 267 10618	7P male vert 2.00
0352	4822 267 10618	7B male vert 2.00
0389	4822 267 10735	3P male vert 2.50
0390	4822 267 10735	3P male vert 2.50
0392	2422 025 09406	4P male vert 2.00
1004	4822 070 32002	Fuse 2A
1005	4822 071 55002	Fuse 5A
1041	4822 071 55002	Fuse 5A
1042	4822 071 55002	Fuse 5A
1045	4822 071 55002	Fuse 5A
1084	2422 086 10849	Fuse 1A 250V
1084	4822 071 31002	Fuse 1A
1084	9965 000 07788	Fuse 2A 250V UL
1110	4822 071 55002	Fuse 5A
1200	9965 000 07788	Fuse 2A 250V UL
1260	2122 662 00107	Resettable fuse 750mA
1400	4822 253 30467	Fuse 6,3A
1401	9965 000 07788	Fuse 2A 250V UL
1402	4822 252 60151	Surge prot. DSP-501N-A21F
1450	4822 280 10382	Relay 1P SDT-SS-109DM
1460	4822 280 10382	Relay 1P SDT-SS-109DM



2000	2020 554 90148	470pF 20% 250V
2001	2222 151 90048	47μF 20% 400V
2001	2222 151 90062	47μF 20% 450V
2002	4822 124 41751	47μF 20% 50V
2003	4822 124 12056	1000μF 20% 35V
2004	2222 464 90017	200pF 1% 630V
2005	4822 121 51288	100pF 630V
2006	3198 016 31020	25V 1nF 0603
2007	2238 586 59812	100nF 80-20% 50V
2007	4822 126 14305	100nF 10% 16V 0603
2008	5322 126 11583	10nF 10% 50V 0603
2009	4822 124 22652	2.2μF 20% 50V
2010	5322 126 11583	10nF 10% 50V 0603
2011	2222 375 90161	18nF 5% 1.6kV
2011	4822 121 70617	10nF 5% 1.6kV
2012	4822 126 11254	330pF 10% 2kV
2012	4822 126 13864	330pF 10% 2kV
2013	4822 126 11254	330pF 10% 2kV
2013	4822 126 13864	330pF 10% 2kV
2014	4822 126 13862	1.5nF 10% 2kV
2015	5322 126 11583	10nF 10% 50V 0603
2016	4822 124 22652	2.2μF 20% 50V
2017	4822 121 70617	10nF 5% 1.6kV
2020	2222 056 59222	2200μF 100V

2021	2222 056 59222	2200µF 100V	2265	4822 126 14241	330pF 50V 0603	2671	2238 586 59812	100nF 80-20% 50V
2022	4822 124 12056	1000µF 20% 35V	2266	4822 126 14494	22nF 10% 25V 0603	2671	3198 017 34730	47nF 16V 0603
2023	2238 586 59812	100nF 80-20% 50V	2267	5322 126 10223	4.7nF 10% 63V	2671	4822 126 14305	100nF 10% 16V 0603
2023	4822 126 14305	100nF 10% 16V 0603	2268	4822 126 13473	220nF 80-20% 50V	2672	4822 126 14305	100nF 10% 16V 0603
2024	4822 126 14043	1µF 20% 16V	2269	2020 021 91524	220µF 20% 25V	2673	4822 121 43343	4.7nF 10% 400V
2024	5322 126 11579	3.3nF 10% 63V	2270	4822 124 40433	47µF 20% 25V	2674	4822 121 41664	22nF 10% 400V
2025	2020 321 90041	180nF 5% 250V	2290	5322 126 11583	10nF 10% 50V 0603	2700	4822 124 80791	470µF 20% 16V
2026	4822 126 14238	2.2nF 50V 0603	2291	4822 126 13883	220pF 5% 50V	2701	5322 126 11583	10nF 10% 50V 0603
2027	3198 017 31530	15nF 50V	2292	2020 021 91354	1000µF 20% 50V	2703	4822 124 80791	470µF 20% 16V
2028	4822 126 13883	220pF 5% 50V	2293	4822 126 13883	220pF 5% 50V	2707	5322 126 11583	10nF 10% 50V 0603
2029	4822 126 13883	220pF 5% 50V	2294	2020 021 91354	1000µF 20% 50V	2709	4822 124 80791	470µF 20% 16V
2030	2238 586 59812	100nF 80-20% 50V	2304	4822 126 14305	100nF 10% 16V 0603			
2030	4822 126 14305	100nF 10% 16V 0603	2305	2238 586 59812	100nF 80-20% 50V			
2032	4822 126 14494	22nF 10% 25V 0603	2305	4822 126 14305	100nF 10% 16V 0603			
2033	2238 586 59812	100nF 80-20% 50V	2306	2238 586 59812	100nF 80-20% 50V			
2033	4822 126 14305	100nF 10% 16V 0603	2306	4822 126 14305	100nF 10% 16V 0603			
2034	4822 126 11979	27pF 5% 2kV	2322	2238 586 59812	100nF 80-20% 50V			
2035	2238 586 15623	1nF 10% 50V 0603	2322	4822 126 14305	100nF 10% 16V 0603			
2036	4822 126 14494	22nF 10% 25V 0603	2324	2238 586 59812	100nF 80-20% 50V			
2038	3198 016 31020	1nF 25V 0603	2324	4822 126 14305	100nF 10% 16V 0603			
2040	2238 586 59812	100nF 80-20% 50V	2343	4822 124 22652	2.2µF 20% 50V			
2040	4822 126 14305	100nF 10% 16V 0603	2352	2238 586 59812	100nF 80-20% 50V			
2041	4822 126 13883	220pF 5% 50V	2352	4822 126 14305	100nF 10% 16V 0603			
2042	4822 126 13883	220pF 5% 50V	2364	2238 586 59812	100nF 80-20% 50V			
2043	2020 021 91543	47µF 20% 160V	2364	4822 126 14305	100nF 10% 16V 0603			
2043	2222 056 59222	2200µF 100V	2370	2238 586 59812	100nF 80-20% 50V			
2044	4822 126 13883	220pF 5% 50V	2370	4822 126 14305	100nF 10% 16V 0603			
2045	4822 126 13883	220pF 5% 50V	2376	2238 586 59812	100nF 80-20% 50V			
2050	2238 586 59812	100nF 80-20% 50V	2376	4822 126 14305	100nF 10% 16V 0603			
2050	4822 126 14305	100nF 10% 16V 0603	2380	3198 016 31020	1nF 25V 0603			
2054	2020 552 94427	100pF 5% 50V	2381	2238 586 59812	100nF 80-20% 50V			
2054	4822 122 31765	100pF 2% 63V 1206	2381	4822 126 14305	100nF 10% 16V 0603			
2055	3198 016 31020	1nF 25V 0603	2382	3198 016 31020	1nF 25V 0603			
2058	4822 124 40756	1µF 20% 100V	2385	3198 017 41050	1µF 10V 0603			
2059	2238 586 59812	100nF 80-20% 50V	2393	2238 586 59812	100nF 80-20% 50V			
2059	4822 126 14305	100nF 10% 16V 0603	2393	4822 126 14305	100nF 10% 16V 0603			
2061	2238 586 59812	100nF 80-20% 50V	2400	4822 126 13589	470nF 275V			
2061	4822 126 14305	100nF 10% 16V 0603	2401	4822 121 10512	220nF 20% 275V			
2090	4822 124 40196	220µF 20% 16V	2401	4822 126 13589	470nF 275V			
2090	4822 124 40769	4.7µF 20% 100V	2402	2020 554 90148	470pF 20% 250V			
2111	4822 126 13883	220pF 5% 50V	2403	2020 554 90148	470pF 20% 250V			
2112	3198 016 31020	1nF 25V 0603	2404	4822 126 14525	47pF 5% 1kV			
2113	2020 012 93505	10µF 20% 25V	2405	2020 554 90148	470pF 20% 250V			
2113	4822 124 80144	220µF 20% 25V	2405	4822 126 13841	1nF 20% 250V			
2113	4822 124 80195	470µF 20% 10V	2406	4822 126 14525	47pF 5% 1kV			
2114	4822 126 13473	220nF 80-20% 50V	2407	2020 554 90148	470pF 20% 250V			
2117	2222 780 15656	330nF 10% 16V	2465	4822 124 40207	100µF 20% 25V			
2117	4822 126 12102	330nF 10% 16V	2503	2222 151 90061	22µF 20% 450V			
2118	4822 126 11382	1nF 10% 1kV	2503	2222 151 90062	47µF 20% 450V			
2118	4822 126 13449	1nF 10% 2kV	2504	5322 126 11578	1nF 10% 50V 0603			
2121	2222 056 59222	2200µF 100V	2505	2020 021 91354	1000µF 20% 50V			
2122	4822 121 51319	1µF 10% 63V	2505	3198 028 44790	47µF 20% 35V			
2123	4822 126 14043	1µF 20% 16V	2507	2020 552 94427	100pF 5% 50V			
2123	5322 126 11579	3.3nF 10% 63V	2507	4822 122 31765	100pF 2% 63V 1206			
2126	2238 586 59812	100nF 80-20% 50V	2508	4822 124 12032	4.7µF 20% 50V			
2126	4822 126 14305	100nF 10% 16V 0603	2509	2020 552 94427	100pF 5% 50V			
2133	3198 029 32290	22µF 20% 25V	2509	4822 122 31765	100pF 2% 63V 1206			
2137	4822 126 14305	100nF 10% 16V 0603	2510	4822 124 81145	1000µF 20% 16V			
2138	4822 124 21913	1µF 20% 63V	2511	2238 586 59812	100nF 80-20% 50V			
2203	2238 586 59812	100nF 80-20% 50V	2511	4822 126 14305	100nF 10% 16V 0603			
2203	4822 126 14305	100nF 10% 16V 0603	2512	2238 586 59812	100nF 80-20% 50V			
2205	2020 552 95447	2.2µF 80-20% 16V	2512	4822 126 14305	100nF 10% 16V 0603			
2205	3198 032 64090	2.2µF 20% 25V	2513	2238 586 59812	100nF 80-20% 50V			
2210	4822 124 40433	47µF 20% 25V	2513	4822 126 14305	100nF 10% 16V 0603			
2211	4822 126 13883	220pF 5% 50V	2530	4822 124 40207	100µF 20% 25V			
2212	2238 586 59812	100nF 80-20% 50V	2530	5322 124 40641	10µF 20% 100V			
2212	4822 126 14305	100nF 10% 16V 0603	2532	4822 124 40207	100µF 20% 25V			
2217	2222 780 15656	330nF 10% 16V	2533	4822 124 40207	100µF 20% 25V			
2217	4822 126 12102	330nF 10% 16V	2540	4822 124 40207	100µF 20% 25V			
2218	2020 558 90609	4.7nF 10% 1kV	2541	4822 124 40207	100µF 20% 25V			
2218	2222 375 90141	3.3nF 5% 1.6kV	2600	4822 122 33799	1nF 10% 1kV			
2219	2020 021 91543	47µF 20% 160V	2601	4822 122 33799	1nF 10% 1kV			
2219	2222 151 90048	47µF 20% 400V	2605	2222 479 90086	1µF 400V 5%			
2222	2020 552 94427	100pF 5% 50V	2608	3198 016 31020	1nF 25V 0603			
2222	4822 122 31765	100pF 2% 63V 1206	2610	4822 121 70581	1.5nF 5% 2kV			
2223	2020 552 94427	100pF 5% 50V	2612	5322 126 11578	1nF 10% 50V 0603			
2223	4822 122 31765	100pF 2% 63V 1206	2613	5322 126 11578	1nF 10% 50V 0603			
2224	2020 021 91551	2200µF 20% 25V	2616	2222 157 57331	330µF 450V			
2225	2020 021 91551	2200µF 20% 25V	2640	4822 126 13881	470pF 5% 50V			
2226	2238 586 59812	100nF 80-20% 50V	2641	3198 016 31020	1nF 25V 0603			
2226	4822 126 14305	100nF 10% 16V 0603	2642	3198 016 31020	1nF 25V 0603			
2227	2020 552 94427	100pF 5% 50V	2651	5322 126 11583	10nF 10% 50V 0603			
2227	4822 122 31765	100pF 2% 63V 1206	2653	4822 126 14241	330pF 50V 0603			
2228	2020 021 91411	1000µF 20% 35V	2654	4822 124 40433	47µF 20% 25V			
2230	5322 121 10472	47µF 25V	2655	2238 780 15654	220nF 10% 16V			
2231	5322 121 10472	47µF 25V	2655	4822 121 51319	1µF 10% 63V			
2232	2020 552 94427	100pF 5% 50V	2656	4822 126 14305	100nF 10% 16V 0603			
2232	4822 122 31765	100pF 2% 63V 1206	2662	4822 124 80061	1000µF 20% 25V			
2260	4822 126 14043	1µF 20% 16V	2663	4822 124 40207	100µF 20% 25V			
2261	2020 021 91411	1000µF 20% 35V	2664	4822 124 40207	100µF 20% 25V			
2262	4822 126 13473	220nF 80-20% 50V	2665	4822 126 13881	470pF 5% 50V			
2263	2222 861 15272	2.7nF 5% 50V	2666	4822 126 13193	4.7nF 10% 63V			
2264	4822 121 51252	470nF 5% 63V	2670	2238 586 59812	100nF 80-20% 50V			
2264	4822 126 13482	470nF 80/20% 16V	2670	4822 126 14305	100nF 10% 16V 0603			



3003	4822 117 13632	100k 1% 0.62W
3004	4822 051 30153	15k 5% 0.062W
3005	4822 051 20393	39k 5% 0.1W
3005	4822 051 30333	33k 5% 0.062W
3006	4822 051 30103	10k 5% 0.062W
3007	4822 051 20472	4k7 5% 0.1W
3008	4822 051 30102	1k 5% 0.062W
3009	4822 051 30102	1k 5% 0.062W
3010	4822 051 30153	15k 5% 0.062W
3011	4822 051 30561	560Ω 5% 0.062W
3012	4822 051 20472	4k7 5% 0.1W
3013	4822 051 30103	10k 5% 0.062W
3014	4822 116 52191	33Ω 5% 0.5W
3015	4822 116 52176	10Ω 5% 0.5W
3016	4822 051 30102	1k 5% 0.062W
3017	4822 116 52191	33Ω 5% 0.5W
3018	4822 116 52176	10Ω 5% 0.5W
3019	4822 051 30102	1k 5% 0.062W
3020	4822 051 30563	56k 5% 0.062W
3021	4822 053 11688	68Ω 5% 2W
3022	4822 051 30331	330Ω 5% 0.062W
3023	4822 117 12902	8k2 1% 0.063W 0603
3023	4822 117 12925	47k 1% 0.063W 0603
3024	4822 050 27503	75k 1% 0.6W
3025	4822 117 12903	1k8 1% 0.063W 0603
3026	4822 101 11383	470Ω 30% LIN
3027	4822 117 12925	47k 1% 0.063W 0603
3028	4822 117 10362	7k5 1% 0.1W
3029	4822 051 30102	1k 5% 0.062W
3030	4822 051 30183	18k 5% 0.062W
3031	2322 704 61103	11k 1%
3032	2322 704 61103	11k 1%
3033	4822 051 30222	2k2 5% 0.062W
3037	4822 051 30103	10k 5% 0.062W
3038	4822 117 13632	100k 1% 0.62W 0603
3039	4822 051 30105	1M 5% 0.062W
3040	4822 117 10837	100k 1% 0.1W
3041	4822 051 30333	33k 5% 0.062W
3042	4822 051 30471	470Ω 5% 0.062W
3043	4822 051 20472	4k7 5% 0.1W
3044	4822 051 30102	1k 5% 0.062W
3045	4822 051 30102	1k 5% 0.062W
3046	4822 053 20565	5M6 5% 0.25W
3047	4822 051 30154	150k 5% 0.062W
3048	4822 051 20472	4k7 5% 0.1W
3049	4822 051 30123	12k 5% 0.062W
3050	4822 052 10398	3Ω9 5% 0.33W
3051	4822 051 20399	39Ω 5% 0.1W
3052	2322 662 93135	PTC 500V 100Ω 25%
3053	2322 662 93131	PTC 10Ω
3053	2322 662 93135	PTC 500V 100Ω 25%
3054	4822 050 21003	10k 1% 0.6W
3056	4822 051 30331	330Ω 5% 0.062W
3057	4822 051 30101	100Ω 5% 0.062W
3057	4822 051 30331	330Ω 5% 0.062W
3058	2322 730 61224	220k 5%
3058	4822 051 20105	1M 5% 0.1W
3061	4822 117 12925	47k 1% 0.063W 0603
3062	4822 051 30102	1k 5% 0.062W
3064	4822 051 30103	10k 5% 0.062W
3065	4822 051 30103	1k 5% 0.062W
3066	4822 051 30103	10k 5% 0.062W
3067	4822 051 30153	15k 5% 0.062W
3070	4822 051 30103	10k 5% 0.062W
3071	4822 117 12925	47k 1% 0.063W 0603
3075	4822 116 83866	1M 5% 0.5W
3076	4822 117 13632	100k 1% 0.62W 0603
3077	4822 116 83866	1M 5% 0.5W
3078	4822 117 13632	100k 1% 0.62W 0603
3080	4822 051 30101	100Ω 5% 0.062W
3081	4822 051 30222	2k2 5% 0.062W
3082	4822 051 30103	10k 5% 0.062W
3083	4822 051 10102	1k 2% 0.25W
3084	4822 051 30103	10k 5% 0.062W
3085	4822 117 12925	47k 1% 0.063W 0603
3086	4822 117 12925	47k 1% 0.063W 0603
3087	4822 117 12925	47k 1% 0.063W 0603
3088	4822 117 12925	47k 1% 0.063W 0603
3090	4822 051 30101	100Ω 5% 0.062W

3090	4822 051 30471	470Ω 5% 0.062W	3319	4822 051 30472	4k7 5% 0.062W	3503	5322 117 13026	4k7 1% 0.063W 0603
3091	4822 051 30102	1k 5% 0.062W	3320	4822 117 10833	10k 1% 0.1W	3505	4822 117 11139	1k5 1% 0.1W
3092	4822 051 30471	470Ω 5% 0.062W	3321	4822 051 30102	1k 5% 0.062W	3505	5322 117 13034	1k5 1% 0.063W 0603
3092	4822 051 30472	4k7 5% 0.062W	3322	4822 117 10833	10k 1% 0.1W	3506	2322 662 93131	PTC 600V 10Ω 20%
3093	4822 051 30102	1k 5% 0.062W	3323	5322 117 13028	12k 1% 0.063W 0603	3507	4822 053 20225	2M2 5% 0.25W
3095	4822 051 30471	470Ω 5% 0.062W	3324	4822 051 30102	1k 5% 0.062W	3508	2322 194 63109	10Ω 5% 2W
3096	4822 051 30562	5k6 5% 0.063W 0603	3325	4822 051 30471	470Ω 5% 0.062W	3520	4822 051 30102	1k 5% 0.062W
3097	4822 117 12968	820Ω 5% 0.62W	3326	4822 051 30472	4k7 5% 0.062W	3520	4822 051 30109	10Ω 5% 0.062W
3110	4822 051 30102	1k 5% 0.062W	3327	4822 051 30103	10k 5% 0.062W	3530	4822 117 13632	100k 1% 0.62W 0603
3111	4822 051 30102	1k 5% 0.062W	3328	4822 051 30103	10k 5% 0.062W	3608	4822 116 52179	12Ω 5% 0.5W
3112	4822 051 30102	1k 5% 0.062W	3330	4822 051 30102	1k 5% 0.062W	3610	5322 116 53564	3Ω3 5% 0.5W
3113	4822 051 30474	470k 5% 0.062W	3331	4822 051 30472	4k7 5% 0.062W	3611	4822 050 11002	1k 1% 0.4W
3114	4822 051 20564	560k 5% 0.1W	3332	4822 117 11144	3k9 1% 0.1W	3613	2120 106 90565	0Ω1 5% 2W
3115	4822 117 12891	220k 1%;	3333	4822 051 30102	1k 5% 0.062W	3614	2120 106 90565	0Ω1 5% 2W
3116	4822 051 30102	1k 5% 0.062W	3334	4822 117 12955	2k7 1% 0.1W 0805	3614	2120 106 90639	0Ω12 5% 2W
3117	4822 051 30103	10k 5% 0.062W	3335	4822 116 83933	15k 1% 0.1W	3615	2120 106 90639	0Ω12 5% 2W
3118	4822 116 83303	0.1Ω 2W	3338	4822 051 30102	1k 5% 0.062W	3639	4822 051 30102	1k 5% 0.062W
3119	4822 116 83303	0.1Ω 2W	3339	4822 051 30472	4k7 5% 0.062W	3640	4822 051 30331	330Ω 5% 0.062W
3120	4822 051 30331	330Ω 5% 0.062W	3340	4822 051 30102	1k 5% 0.062W	3641	4822 051 30471	470Ω 5% 0.062W
3120	4822 117 12903	1k8 1% 0.063W 0603	3341	4822 051 30103	10k 5% 0.062W	3642	4822 051 30101	100Ω 5% 0.062W
3121	4822 117 12902	8k2 1% 0.063W 0603	3342	4822 051 30103	10k 5% 0.062W	3650	2322 156 21305	1M3 1%
3121	4822 117 12925	47k 1% 0.063W 0603	3343	4822 051 30102	1k 5% 0.062W	3651	4822 051 30103	10k 5% 0.062W
3122	2322 734 67503	75k 1% 0.063W 0805	3344	4822 051 30102	1k 5% 0.062W	3651	4822 051 30472	4k7 5% 0.062W
3123	4822 117 10965	18k 1% 0.1W	3345	4822 051 30472	4k7 5% 0.062W	3652	4822 051 30105	1M 5% 0.062W
3124	2120 108 94004	7k5 1% 0.063W 0603	3346	4822 051 30102	1k 5% 0.062W	3653	4822 116 52231	820Ω 5% 0.5W
3125	2120 108 94004	7k5 1% 0.063W 0603	3347	4822 051 30331	330Ω 5% 0.062W	3654	4822 051 30103	10k 5% 0.062W
3126	4822 051 30222	2k2 5% 0.062W	3348	4822 051 30331	330Ω 5% 0.062W	3655	4822 051 30102	1k 5% 0.062W
3127	4822 101 11187	1k 30% LIN 0.1W	3349	4822 051 30102	1k 5% 0.062W	3663	4822 052 10108	1Ω 5% 0.33W
3128	4822 051 30333	33k 5% 0.062W	3350	4822 051 30472	4k7 5% 0.062W	3664	4822 117 13579	220k 1% 0.1W 0805
3129	4822 053 10103	10k 5% 1W	3351	4822 051 30103	10k 5% 0.062W	3665	4822 051 30103	10k 5% 0.062W
3130	4822 051 30102	1k 5% 0.062W	3352	4822 051 30103	10k 5% 0.062W	3666	4822 116 52175	100Ω 5% 0.5W
3131	2322 704 61103	11k 1%	3353	4822 051 30103	10k 5% 0.062W	3667	4822 051 30103	10k 5% 0.062W
3132	4822 051 30103	10k 5% 0.062W	3354	4822 051 30472	4k7 5% 0.062W	3668	4822 052 11102	1k 5% 0.5W
3133	4822 051 30101	100Ω 5% 0.062W	3358	4822 051 30222	2k2 5% 0.062W	3670	4822 050 27504	750k 1% 0.6W
3133	4822 051 30331	330Ω 5% 0.062W	3359	4822 051 30472	4k7 5% 0.062W	3671	4822 117 10833	10k 1% 0.1W
3134	4822 051 30331	330Ω 5% 0.062W	3360	4822 117 11817	1k2 1% 0.062W	3673	4822 052 11102	1k 5% 0.5W
3135	4822 117 12925	47k 1% 0.063W 0603	3361	4822 051 30472	4k7 5% 0.062W	3674	4822 053 20105	1M 5% 0.25W
3136	4822 117 12925	47k 1% 0.063W 0603	3362	4822 051 30102	1k 5% 0.062W	3700	4822 051 30102	1k 5% 0.062W
3137	4822 117 12925	47k 1% 0.063W 0603	3363	4822 051 30102	1k 5% 0.062W	3700	4822 051 30331	330Ω 5% 0.062W
3138	4822 117 11503	220Ω 1% 0.1W	3364	4822 051 30102	1k 5% 0.062W	3701	4822 051 30102	1k 5% 0.062W
3139	4822 117 11503	220Ω 1% 0.1W	3365	4822 051 30102	1k 5% 0.062W	3701	4822 051 30222	2k2 5% 0.062W
3140	2322 734 67503	75k 1% 0.063W 0805	3366	4822 051 30103	10k 5% 0.062W	3702	4822 051 30102	1k 5% 0.062W
3141	2322 734 67503	75k 1% 0.063W 0805	3367	4822 051 30103	10k 5% 0.062W	3702	4822 051 30222	2k2 5% 0.062W
3142	5322 117 12487	1k 1% 0.125W	3368	2120 660 90042	PTC 16V 330Ω	3703	4822 051 30101	100Ω 5% 0.062W
3146	2306 327 90035	0Ω22 1% 2W	3369	4822 051 30272	2k7 5% 0.062W	3703	4822 051 30102	1k 5% 0.062W
3147	2322 704 61103	11k 1%	3370	4822 051 30101	100Ω 5% 0.062W	3706	4822 051 30102	1k 5% 0.062W
3200	2322 730 61224	220k 5%	3371	4822 051 30101	100Ω 5% 0.062W	3706	4822 051 30331	330Ω 5% 0.062W
3201	4822 053 10103	10k 5% 1W	3372	9337 224 60116	Temp sensor KTY81-220	3707	4822 051 30102	1k 5% 0.062W
3202	4822 051 30479	47Ω 5% 0.062W	3373	4822 051 30103	10k 5% 0.062W	3707	4822 051 30222	2k2 5% 0.062W
3203	4822 051 30101	100Ω 5% 0.062W	3373	4822 051 30472	4k7 5% 0.062W	3708	4822 051 30102	1k 5% 0.062W
3204	4822 117 13632	100k 1% 0.62W 0603	3374	4822 117 12925	47k 1% 0.063W 0603	3708	4822 051 30222	2k2 5% 0.062W
3205	4822 117 13632	100k 1% 0.62W 0603	3375	4822 117 12925	47k 1% 0.063W 0603	3709	4822 051 30101	100Ω 5% 0.062W
3212	4822 051 30102	1k 5% 0.062W	3376	4822 117 12925	47k 1% 0.063W 0603	3709	4822 051 30102	1k 5% 0.062W
3213	4822 051 30105	1M 5% 0.062W	3377	4822 051 30103	10k 5% 0.062W	3999	4822 051 30102	1k 5% 0.062W
3214	4822 117 12889	270k 1% 0.063W 0603	3377	4822 051 30472	4k7 5% 0.062W			
3216	4822 051 30102	1k 5% 0.062W	3378	4822 117 12925	47k 1% 0.063W 0603			
3217	4822 051 30103	10k 5% 0.062W	3380	4822 117 12925	47k 1% 0.063W 0603			
3218	4822 116 83303	0.1Ω 2W	3381	4822 117 12925	47k 1% 0.063W 0603			
3219	4822 116 83303	0.1Ω 2W	3382	4822 117 11449	2k2 5% 0.1W 0805			
3224	5322 117 13028	12k 1% 0.063W 0603	3382	4822 117 12955	2k7 1% 0.1W 0805			
3225	2322 704 61103	11k 1%	3382	8222 676 14211	4k75 1% 0.1W			
3226	4822 051 30103	10k 5% 0.062W	3383	4822 051 30471	470Ω 5% 0.062W			
3228	4822 051 30151	150Ω 5% 0.062W	3384	4822 051 30471	470Ω 5% 0.062W			
3240	4822 051 30102	1k 5% 0.062W	3385	4822 117 13632	100k 1% 0.62W 0603			
3241	4822 051 30102	1k 5% 0.062W	3386	4822 117 13632	100k 1% 0.62W 0603			
3260	4822 051 30102	1k 5% 0.062W	3387	4822 051 30471	470Ω 5% 0.062W			
3261	4822 051 30102	1k 5% 0.062W	3388	4822 051 30102	1k 5% 0.062W			
3262	4822 117 11188	20k 1% 0.1W	3389	4822 051 30102	1k 5% 0.062W			
3264	4822 051 30682	6k8 5% 0.062W	3390	4822 051 30102	1k 5% 0.062W			
3268	4822 051 30102	1k 5% 0.062W	3390	4822 051 30103	10k 5% 0.062W			
3268	4822 117 13632	100k 1% 0.62W 0603	3391	4822 051 30103	10k 5% 0.062W			
3292	4822 051 30561	560Ω 5% 0.062W	3392	4822 051 30102	1k 5% 0.062W			
3300	4822 117 13579	220k 1% 0.1W 0805	3393	4822 051 30102	1k 5% 0.062W			
3301	4822 117 13579	220k 1% 0.1W 0805	3393	4822 051 30103	10k 5% 0.062W			
3302	4822 117 13579	220k 1% 0.1W 0805	3394	4822 051 30102	1k 5% 0.062W			
3302	8222 676 14191	100k 1% 0.1W	3395	4822 051 30103	10k 5% 0.062W			
3303	4822 117 13579	220k 1% 0.1W 0805	3400	2322 595 90021	VDR 1mA/495V MAX 850V			
3303	8222 676 14201	57k6 1% 0.1W R	3401	4822 117 10118	1M 5% 0.5W			
3304	4822 051 30102	1k 5% 0.062W	3402	4822 053 21475	4M7 5% 0.5W			
3305	2322 704 61103	11k 1%	3403	4822 053 21475	4M7 5% 0.5W			
3305	4822 051 30008	Jumper 0603	3404	4822 116 83872	220Ω 5% 0.5W			
3306	2322 704 61103	11k 1%	3450	2322 662 93131	PTC 600V 10Ω 20%			
3307	2322 704 61103	11k 1%	3451	2322 662 93131	PTC 600V 10Ω 20%			
3308	4822 051 30102	1k 5% 0.062W	3452	2122 612 00051	NTC DC B57464 6.7W 1Ω 20%			
3309	4822 051 30102	1k 5% 0.062W						
3310	4822 051 30472	4k7 5% 0.062W	3460	4822 051 30472	4k7 5% 0.062W			
3311	4822 117 13579	220k 1% 0.1W 0805	3461	4822 051 30103	10k 5% 0.062W			
3312	4822 051 30102	1k 5% 0.062W	3463	4822 051 30103	10k 5% 0.062W			
3313	2322 704 61103	11k 1%	3465	4822 051 30103	10k 5% 0.062W			
3314	2120 108 94004	7k5 1% 0.063W 0603	3467	4822 051 30103	10k 5% 0.062W			
3315	5322 117 12487	1k 1% 0.125W	3469	4822 051 30472	4k7 5% 0.062W			
3316	4822 117 11596	390Ω 1% 0.1W	3470	4822 051 30103	10k 5% 0.062W			
3317	2120 108 94004	7k5 1% 0.063W 0603	3501	4822 051 30101	100Ω 5% 0.062W			
3318	4822 051 30102	1k 5% 0.062W	3502	4822 051 30471	470Ω 5% 0.062W			



5001	8222 289 53691	Driver transf. CE136H
5002	3128 138 40371	Resonant transf. CE423D
5003	4822 157 71442	150μH 10%
5120	3128 138 40381	Coil CU20V
5200	3198 018 71010	100μH 10%
5220	3128 138 70541	VCC transf. CT296F
5224	2422 535 95273	6.8μH 20%
5225	2422 535 95273	6.8μH 20%
5260	3198 018 71010	100μH 10%
5268	2422 536 00288	100μH 10%
5290	3128 138 40391	Audio transf. CU15
5291	4822 157 71467	39μH 10%
5292	4822 157 71467	39μH 10%
5293	4822 157 71467	39μH 10%
5401	3122 138 38901	Mains filter CU28D3
5402	3122 138 38901	Mains filter CU28D3
5500	3128 138 40361	Standby transf. CE165T
5600	3128 138 40351	Preconditioner transf. CE423D
5612	4822 157 11411	Bead 100MHz
5703	4822 157 71414	1000μH 10%
5704	4822 157 11499	Bead 100MHz 60Ω
5709	4822 157 71414	1000μH 10%
5710	4822 157 11499	Bead 100MHz 60Ω

6013	4822 130 34281	BZX79-B15	6513	9322 099 61685	BYG10J	7341	5322 130 42756	BC857C
6018	4822 130 11397	BAS316	6520	4822 130 11397	BAS316	7341	9340 218 50115	BC857BW
6019	4822 130 11397	BAS316	6530	4822 130 11152	UDZ18B	7348	3198 010 42310	BC847BW
6021	4822 130 32961	BYV28-200	6531	4822 130 11152	UDZ18B	7348	9340 217 70115	BC847BW
6021	9340 550 66112	BYV28-200/24	6600	9322 131 67679	Bridge GBU8JL-7000	7351	3198 010 42310	BC847BW
6022	4822 130 11397	BAS316	6605	4822 130 80137	1N5406	7351	9340 217 70115	BC847BW
6023	4822 130 11397	BAS316	6605	9322 161 81682	1N5406L-7024	7352	3198 010 42310	BC847BW
6027	4822 130 30621	1N4148	6606	4822 130 80137	1N5406	7352	9340 217 70115	BC847BW
6028	4822 130 30621	1N4148	6606	9322 161 81682	1N5406L-7024	7362	3198 010 42310	BC847BW
6031	9322 129 37685	BZM55-C5V6	6608	4822 130 11397	BAS316	7362	9340 217 70115	BC847BW
6032	9322 129 37685	BZM55-C5V6	6609	4822 130 32152	BZT03-C18	7366	4822 209 63709	LM324D
6033	4822 130 11594	BZX284-C47	6611	3139 120 52021	BYV29X-500	7370	5322 209 33172	PCF8574AT
6034	4822 130 11397	BAS316	6611	4822 130 83796	BYV29F-500	7371	4822 130 40959	BC547B
6035	4822 130 11397	BAS316	6640	9339 680 20115	PRLL5819	7375	3198 010 42310	BC847BW
6041	9322 167 08687	STTH2003CF	6641	4822 130 11397	BAS316	7375	9340 217 70115	BC847BW
6042	9322 150 18685	BZX384-C47	6642	9339 680 20115	PRLL5819	7376	3198 010 42310	BC847BW
6044	9322 167 08687	STTH2003CF	6643	4822 130 11152	UDZ18B	7376	9340 217 70115	BC847BW
6045	4822 130 32961	BYV28-200	6651	9339 680 20115	PRLL5819	7389	5322 130 42756	BC857C
6045	9340 550 66112	BYV28-200/24	6652	9339 680 20115	PRLL5819	7389	9340 218 50115	BC857BW
6050	4822 130 31024	BZX79-B18	6653	4822 130 11666	BZX284-C8V2	7391	5322 130 42756	BC857C
6053	4822 130 42488	BYD33D	6653	9322 129 39685	BZM55-C8V2	7391	9340 218 50115	BC857BW
6054	4822 130 42488	BYD33D	6654	4822 130 11397	BAS316	7393	3198 010 42310	BC847BW
6055	4822 130 42488	BYD33D	6660	9322 128 65685	RS1G	7393	9340 217 70115	BC847BW
6061	4822 130 31024	BZX79-B18	6661	9322 128 65685	RS1G	7460	4822 130 42804	BC817-25
6075	9336 018 60133	BZT03-C300	6663	4822 130 11397	BAS316	7465	5322 130 42756	BC857C
6077	9336 018 60133	BZT03-C300	6665	9339 680 20115	PRLL5819	7465	9340 218 50115	BC857BW
6082	4822 130 11397	BAS316	6700	4822 130 11152	UDZ18B	7470	4822 130 42804	BC817-25
6086	4822 130 83757	MCL4148	6703	9339 680 20115	PRLL5819	7500	9322 037 99682	TNY256P
6095	4822 130 11397	BAS316	6706	4822 130 11152	UDZ18B	7501	9322 149 04682	TCET1102
6111	4822 130 11397	BAS316	6709	9339 680 20115	PRLL5819	7502	4822 209 81397	TL431CLPST
6112	4822 130 11397	BAS316				7530	9322 157 95668	STD16NE06L
6113	4822 130 11397	BAS316				7531	9322 157 95668	STD16NE06L
6117	4822 130 11152	UDZ18B				7540	4822 209 80817	L7805CV
6120	4822 130 11596	BYW29EX-200				7608	5322 130 44593	BC369
6123	4822 130 11397	BAS316	7001	9322 108 21682	MC34067P	7610	9322 130 47687	STY34NB50
6132	4822 130 11397	BAS316	7002	9322 149 04682	TCET1102	7640	4822 130 63316	BSN304
6133	4822 130 11397	BAS316	7003	9322 149 04682	TCET1102	7641	4822 130 40981	BC337-25
6142	4822 130 42488	BYD33D	7005	9322 164 01687	STU16NB50I	7650	9322 130 69682	MC33368P
6202	4822 130 11397	BAS316	7006	9322 164 01687	STU16NB50I	7654	5322 130 42756	BC857C
6205	4822 130 11152	UDZ18B	7007	4822 130 40854	BC327	7654	9340 218 50115	BC857BW
6206	4822 130 11397	BAS316	7008	4822 130 40854	BC327	7660	5322 209 71759	MCT7815CT
6211	9322 128 65685	RS1G	7009	3198 010 42310	BC847BW	7700	9322 115 29668	SI9433DY
6213	4822 130 11397	BAS316	7009	9340 217 70115	BC847BW	7701	3198 010 42310	BC847BW
6216	4822 130 11152	UDZ18B	7010	4822 209 81397	TL431CLPST	7701	9340 217 70115	BC847BW
6224	9322 164 40682	STPS20L40CF	7011	4822 209 81397	TL431CLPST	7706	9322 115 29668	SI9433DY
6224	9322 173 47687	STPS20L40CFP	7017	5322 130 42756	BC857C	7707	3198 010 42310	BC847BW
6225	9322 164 40682	STPS20L40CF	7017	9340 218 50115	BC857BW	7707	9340 217 70115	BC847BW
6225	9322 173 47687	STPS20L40CFP	7018	3198 010 42310	BC847BW			
6230	4822 130 42488	BYD33D	7018	9340 217 70115	BC847BW			
6230	5322 130 31938	BYV27-200	7020	9335 671 30126	BC517			
6232	4822 130 11522	UDZ15B	7021	9335 671 30126	BC517			
6260	4822 130 11421	BT151X-500R	7022	3198 010 42310	BC847BW			
6267	9322 161 77682	SB540L-7024	7022	9340 217 70115	BC847BW			
6290	4822 130 11596	BYW29EX-200	7042	4822 130 41646	BF423			
6291	9322 131 78682	D4SBL20US-4100	7050	9340 557 17118	PSMN035-150B			
6293	4822 130 11596	BYW29EX-200	7052	9322 165 02668	IRFR18N15D			
6312	4822 130 11397	BAS316	7058	3198 010 42310	BC847BW			
6312	4822 130 11528	1PS76SB10	7058	9340 217 70115	BC847BW			
6313	4822 130 11528	1PS76SB10	7059	4822 130 41646	BF423			
6314	4822 130 11397	BAS316	7059	4822 130 41782	BF422			
6321	4822 130 11397	BAS316	7090	5322 130 42756	BC857C			
6321	4822 130 11528	1PS76SB10	7090	9340 218 50115	BC857BW			
6322	4822 130 11528	1PS76SB10	7091	5322 130 42756	BC857C			
6324	4822 130 11397	BAS316	7091	9340 218 50115	BC857BW			
6325	4822 130 11416	PDZ6.8B	7092	4822 130 41246	BC327-25			
6333	4822 130 11397	BAS316	7093	4822 209 80591	LM317T			
6333	4822 130 11528	1PS76SB10	7110	4822 130 41646	BF423			
6334	4822 130 11528	1PS76SB10	7111	4822 130 41646	BF423			
6335	4822 130 11397	BAS316	7112	9352 673 56112	TEA1507P/N1			
6340	4822 130 11397	BAS316	7117	9340 557 17118	PSMN035-150B			
6340	4822 130 11528	1PS76SB10	7120	9322 149 04682	TCET1102			
6341	4822 130 11528	1PS76SB10	7121	4822 209 81397	TL431CLPST			
6342	4822 130 11397	BAS316	7130	4822 209 81397	TL431CLPST			
6344	4822 130 10838	UDZ3.3B	7134	3198 010 42310	BC847BW			
6347	4822 130 10654	BAT254	7134	9340 217 70115	BC847BW			
6348	4822 130 20297	BT169B	7135	3198 010 42310	BC847BW			
6362	4822 130 11397	BAS316	7140	9340 425 10115	BC857BS			
6364	4822 130 11397	BAS316	7142	4822 130 41646	BF423			
6365	4822 130 11397	BAS316	7200	4822 130 63316	BSN304			
6375	4822 130 11397	BAS316	7202	5322 130 63289	BSN20			
6376	4822 130 11397	BAS316	7202	9965 000 04199	BSN20			
6390	4822 130 11397	BAS316	7212	9352 673 56112	TEA1507P/N1			
6460	4822 130 11397	BAS316	7217	9340 557 18127	PSMN070-200P			
6461	4822 130 11397	BAS316	7220	9322 149 04682	TCET1102			
6470	4822 130 11397	BAS316	7227	4822 209 81397	TL431CLPST			
6471	4822 130 11397	BAS316	7230	4822 209 12334	L4940V85			
6501	9336 018 60133	BZT03-C300	7260	9322 166 31682	L4973V3.3			
6502	9336 018 60133	BZT03-C300	7304	4822 209 81397	TL431CLPST			
6503	9322 128 65685	RS1G	7308	4822 209 60177	LM339D			
6504	9322 128 65685	RS1G	7326	3198 010 42310	BC847BW			
6505	9322 161 76682	SB340L-7024	7326	9340 217 70115	BC847BW			
6510	9322 099 61685	BYG10J	7327	3198 010 42310	BC847BW			
6511	9322 099 61685	BYG10J	7327	9340 217 70115	BC847BW			
6512	9322 099 61685	BYG10J	7330	4822 209 60177	LM339D			

SCAVIO Panel [SC]

Various

0301	2422 025 17136	20P male vert 1.25
0301	2422 025 17396	20P male vert 1.25
0305	2422 025 16705	12P male hor 2.00
0315	2422 025 16542	2P male hor 2.00
0318	2422 025 17233	32P female vert 1.00
0319	2422 025 17047	13P male hor 2.00
0320	2422 025 16545	10P male hor 2.00
0375	2422 033 00401	24P female hor 1.91
0376	2422 025 16768	9P female SUB-D
0378	2422 026 05071	Socket 4 x cinch WH-RD
0378	2422 026 05273	Socket 6 x cinch WH-RD
0379	2422 026 05274	Socket 6 x cinch
0380	2422 026 05275	Socket 6 x cinch
0381	4822 267 10994	Socket SVHS
0382	2422 025 17253	10P male vert 2.54
0382	2422 025 17274	10P male vert
0385	2422 025 17253	10P male vert 2.54
0385	2422 025 17274	10P male vert
0388	2422 025 16703	7P male hor 2.00
0388	2422 025 16704	8P male hor 2.00
1100	2422 086 11009	Fuse SMD T1.0A 63V IEC
1105	2422 086 11031	Fuse SMD F500mA 63V UL
1170	2422 086 11031	Fuse SMD F500mA 63V UL
1171	2422 086 11013	Fuse SMD F315mA 32V UL
1270	2422 086 11031	Fuse SMD F500mA 63V UL
1415	2422 543 89022	Crystal 6MHz
1570	2422 543 01115	Crystal 24.576 MHz
1575	2422 086 11031	Fuse SMD F500mA 63V UL
1670	2422 086 10964	Fuse SMD T630mA 63V IEC
1670	2422 086 11031	Fuse SMD F500mA 63V UL
8631	3122 358 76492	SCAVIO wire

-II-

2000	2238 586 59812	100nF 80-20% 50V
2001	2238 586 59812	100nF 80-20% 50V
2002	4822 126 14491	2.2µF 10V
2003	2238 586 59812	100nF 80-20% 50V
2007	2238 586 59812	100nF 80-20% 50V

2007	4822 126 14305	100nF 10% 16V 0603	2187	2238 586 59812	100nF 80-20% 50V	2355	4822 126 14305	100nF 10% 16V 0603
2009	2238 586 59812	100nF 80-20% 50V	2187	4822 126 14305	100nF 10% 16V 0603	2356	2238 586 59812	100nF 80-20% 50V
2009	4822 126 14305	100nF 10% 16V 0603	2188	2238 586 59812	100nF 80-20% 50V	2356	4822 126 14305	100nF 10% 16V 0603
2012	2238 586 59812	100nF 80-20% 50V	2188	4822 126 14305	100nF 10% 16V 0603	2365	4822 126 14305	100nF 10% 16V 0603
2014	5322 126 11583	10nF 10% 50V 0603	2189	2238 586 59812	100nF 80-20% 50V	2370	2238 586 59812	100nF 80-20% 50V
2020	2238 586 59812	100nF 80-20% 50V	2189	4822 126 14305	100nF 10% 16V 0603	2370	4822 126 14305	100nF 10% 16V 0603
2021	3198 017 44740	470nF 10V 0603	2190	2238 586 59812	100nF 80-20% 50V	2372	2238 586 59812	100nF 80-20% 50V
2022	2238 586 59812	100nF 80-20% 50V	2190	4822 126 14305	100nF 10% 16V 0603	2372	4822 126 14305	100nF 10% 16V 0603
2030	3198 017 44740	470nF 10V 0603	2191	2238 586 59812	100nF 80-20% 50V	2375	2238 586 59812	100nF 80-20% 50V
2034	5322 126 11583	10nF 10% 50V 0603	2191	4822 126 14305	100nF 10% 16V 0603	2375	4822 126 14305	100nF 10% 16V 0603
2040	2238 586 59812	100nF 80-20% 50V	2192	2238 586 59812	100nF 80-20% 50V	2376	4822 126 14305	100nF 10% 16V 0603
2041	2238 586 59812	100nF 80-20% 50V	2192	4822 126 14305	100nF 10% 16V 0603	2381	2238 586 59812	100nF 80-20% 50V
2042	2238 586 59812	100nF 80-20% 50V	2193	2238 586 59812	100nF 80-20% 50V	2381	4822 126 14305	100nF 10% 16V 0603
2060	2238 586 59812	100nF 80-20% 50V	2193	4822 126 14305	100nF 10% 16V 0603	2382	2238 586 59812	100nF 80-20% 50V
2061	2238 586 59812	100nF 80-20% 50V	2195	4822 124 23002	10µF 16V	2382	4822 126 14305	100nF 10% 16V 0603
2061	4822 126 14305	100nF 10% 16V 0603	2196	4822 124 23002	10µF 16V	2383	2238 586 59812	100nF 80-20% 50V
2066	2238 586 59812	100nF 80-20% 50V	2197	4822 124 23002	10µF 16V	2383	4822 126 14305	100nF 10% 16V 0603
2066	4822 126 14305	100nF 10% 16V 0603	2198	4822 124 23002	10µF 16V	2415	2238 867 75339	33pF 5% 50V 0603
2072	5322 124 41945	22µF 20% 35V	2199	4822 124 23002	10µF 16V	2416	4822 126 11669	27pF 10% 50V
2077	5322 124 41945	22µF 20% 35V	2205	2238 586 59812	100nF 80-20% 50V	2418	3198 016 31020	1nF 25V 0603
2082	5322 124 41945	22µF 20% 35V	2205	4822 126 14305	100nF 10% 16V 0603	2419	3198 016 31020	1nF 25V 0603
2088	2238 586 59812	100nF 80-20% 50V	2206	2238 586 59812	100nF 80-20% 50V	2420	2238 586 59812	100nF 80-20% 50V
2089	2238 586 59812	100nF 80-20% 50V	2206	4822 126 14305	100nF 10% 16V 0603	2420	4822 126 14305	100nF 10% 16V 0603
2090	2238 586 59812	100nF 80-20% 50V	2207	2238 586 59812	100nF 80-20% 50V	2432	2238 586 59812	100nF 80-20% 50V
2090	4822 126 14305	100nF 10% 16V 0603	2207	4822 126 14305	100nF 10% 16V 0603	2432	4822 126 14305	100nF 10% 16V 0603
2097	3198 016 31080	1pF 50V 0603	2208	4822 126 14127	39nF 10% 50V	2433	2238 586 59812	100nF 80-20% 50V
2103	3198 016 31080	1pF 50V 0603	2210	5322 126 11581	3.9nF 10% 63V	2433	4822 126 14305	100nF 10% 16V 0603
2112	5322 124 41945	22µF 20% 35V	2212	2238 586 59812	100nF 80-20% 50V	2434	2238 586 59812	100nF 80-20% 50V
2113	2238 586 59812	100nF 80-20% 50V	2212	4822 126 14305	100nF 10% 16V 0603	2434	4822 126 14305	100nF 10% 16V 0603
2115	3198 017 34730	47nF 16V 0603	2217	2238 586 59812	100nF 80-20% 50V	2435	2238 586 59812	100nF 80-20% 50V
2116	5322 124 41945	22µF 20% 35V	2220	4822 124 23002	10µF 16V	2435	4822 126 14305	100nF 10% 16V 0603
2117	2238 586 59812	100nF 80-20% 50V	2221	4822 124 23002	10µF 16V	2436	2238 586 59812	100nF 80-20% 50V
2119	3198 017 34730	47nF 16V 0603	2222	4822 124 23002	10µF 16V	2436	4822 126 14305	100nF 10% 16V 0603
2120	5322 124 41945	22µF 20% 35V	2223	4822 124 23002	10µF 16V	2437	2238 586 59812	100nF 80-20% 50V
2123	2238 586 59812	100nF 80-20% 50V	2224	4822 124 23002	10µF 16V	2437	4822 126 14305	100nF 10% 16V 0603
2134	5322 124 41945	22µF 20% 35V	2228	4822 124 23002	10µF 16V	2438	4822 126 13879	220nF 20% 16V
2137	5322 124 41945	22µF 20% 35V	2230	2238 586 59812	100nF 80-20% 50V	2439	4822 126 13879	220nF 20% 16V
2140	5322 124 41945	22µF 20% 35V	2231	2238 586 59812	100nF 80-20% 50V	2446	2238 586 59812	100nF 80-20% 50V
2142	2238 586 59812	100nF 80-20% 50V	2232	2238 586 59812	100nF 80-20% 50V	2446	4822 126 14305	100nF 10% 16V 0603
2142	4822 126 14305	100nF 10% 16V 0603	2240	2238 586 59812	100nF 80-20% 50V	2447	2238 586 59812	100nF 80-20% 50V
2143	4822 124 12095	100µF 20% 16V	2247	2238 586 59812	100nF 80-20% 50V	2447	4822 126 14305	100nF 10% 16V 0603
2144	5322 124 41945	22µF 20% 35V	2248	2238 586 59812	100nF 80-20% 50V	2448	2238 586 59812	100nF 80-20% 50V
2145	2238 586 59812	100nF 80-20% 50V	2249	2238 586 59812	100nF 80-20% 50V	2448	4822 126 14305	100nF 10% 16V 0603
2146	3198 017 34730	47nF 16V 0603	2250	2238 586 59812	100nF 80-20% 50V	2499	2238 586 59812	100nF 80-20% 50V
2147	5322 124 41945	22µF 20% 35V	2260	3198 017 34730	47nF 16V 0603	2499	4822 126 14305	100nF 10% 16V 0603
2150	5322 124 41945	22µF 20% 35V	2261	3198 017 34730	47nF 16V 0603	2500	2238 586 59812	100nF 80-20% 50V
2151	3198 017 34730	47nF 16V 0603	2262	3198 017 34730	47nF 16V 0603	2500	4822 126 14305	100nF 10% 16V 0603
2152	3198 017 34730	47nF 16V 0603	2263	3198 017 34730	47nF 16V 0603	2501	4822 126 14226	82pF 5% 50V 0603
2153	5322 124 41945	22µF 20% 35V	2264	3198 017 34730	47nF 16V 0603	2502	4822 126 14226	82pF 5% 50V 0603
2156	5322 124 41945	22µF 20% 35V	2265	3198 017 34730	47nF 16V 0603	2503	4822 126 14226	82pF 5% 50V 0603
2157	2238 586 59812	100nF 80-20% 50V	2266	3198 017 34730	47nF 16V 0603	2504	4822 126 14226	82pF 5% 50V 0603
2158	3198 017 34730	47nF 16V 0603	2267	3198 017 34730	47nF 16V 0603	2505	4822 126 14226	82pF 5% 50V 0603
2159	5322 124 41945	22µF 20% 35V	2268	3198 017 34730	47nF 16V 0603	2506	2238 586 59812	100nF 80-20% 50V
2164	4822 124 12095	100µF 20% 16V	2269	3198 017 34730	47nF 16V 0603	2506	4822 126 14305	100nF 10% 16V 0603
2165	2238 586 59812	100nF 80-20% 50V	2270	3198 017 34730	47nF 16V 0603	2511	2238 586 59812	100nF 80-20% 50V
2165	4822 126 14305	100nF 10% 16V 0603	2271	3198 017 34730	47nF 16V 0603	2511	4822 126 14305	100nF 10% 16V 0603
2166	2238 586 59812	100nF 80-20% 50V	2274	3198 017 34730	47nF 16V 0603	2513	2238 586 59812	100nF 80-20% 50V
2166	4822 126 14305	100nF 10% 16V 0603	2275	3198 017 34730	47nF 16V 0603	2513	4822 126 14305	100nF 10% 16V 0603
2167	4822 124 12095	100µF 20% 16V	2276	3198 017 34730	47nF 16V 0603	2515	2238 586 59812	100nF 80-20% 50V
2168	4822 124 23002	10µF 16V	2280	2238 586 59812	100nF 80-20% 50V	2515	4822 126 14305	100nF 10% 16V 0603
2170	2238 586 59812	100nF 80-20% 50V	2281	2238 586 59812	100nF 80-20% 50V	2520	4822 124 23002	10µF 16V
2170	4822 126 14305	100nF 10% 16V 0603	2282	2238 586 59812	100nF 80-20% 50V	2521	4822 124 23002	10µF 16V
2171	2238 586 59812	100nF 80-20% 50V	2283	2238 586 59812	100nF 80-20% 50V	2522	4822 124 23002	10µF 16V
2171	4822 126 14305	100nF 10% 16V 0603	2284	2238 586 59812	100nF 80-20% 50V	2523	4822 124 23002	10µF 16V
2172	2238 586 59812	100nF 80-20% 50V	2285	2238 586 59812	100nF 80-20% 50V	2524	4822 124 23002	10µF 16V
2172	4822 126 14305	100nF 10% 16V 0603	2286	2238 586 59812	100nF 80-20% 50V	2530	5322 124 41945	22µF 20% 35V
2173	2238 586 59812	100nF 80-20% 50V	2287	2238 586 59812	100nF 80-20% 50V	2531	2238 586 59812	100nF 80-20% 50V
2173	4822 126 14305	100nF 10% 16V 0603	2288	2238 586 59812	100nF 80-20% 50V	2531	4822 126 14305	100nF 10% 16V 0603
2174	2238 586 59812	100nF 80-20% 50V	2300	4822 124 12095	100µF 20% 16V	2533	2238 586 59812	100nF 80-20% 50V
2174	4822 126 14305	100nF 10% 16V 0603	2301	2238 586 59812	100nF 80-20% 50V	2533	4822 126 14305	100nF 10% 16V 0603
2175	2238 586 59812	100nF 80-20% 50V	2301	4822 126 14305	100nF 10% 16V 0603	2534	2238 586 59812	100nF 80-20% 50V
2175	4822 126 14305	100nF 10% 16V 0603	2302	4822 124 23002	10µF 16V	2534	4822 126 14305	100nF 10% 16V 0603
2176	2238 586 59812	100nF 80-20% 50V	2304	2238 586 59812	100nF 80-20% 50V	2535	2238 586 59812	100nF 80-20% 50V
2176	4822 126 14305	100nF 10% 16V 0603	2304	4822 126 14305	100nF 10% 16V 0603	2535	4822 126 14305	100nF 10% 16V 0603
2177	2238 586 59812	100nF 80-20% 50V	2308	5322 124 41945	22µF 20% 35V	2537	3198 016 31020	1nF 25V 0603
2177	4822 126 14305	100nF 10% 16V 0603	2310	2238 586 59812	100nF 80-20% 50V	2538	3198 016 31020	1nF 25V 0603
2178	2238 586 59812	100nF 80-20% 50V	2310	4822 126 14305	100nF 10% 16V 0603	2541	2238 586 59812	100nF 80-20% 50V
2178	4822 126 14305	100nF 10% 16V 0603	2311	2238 586 59812	100nF 80-20% 50V	2541	4822 126 14305	100nF 10% 16V 0603
2179	2238 586 59812	100nF 80-20% 50V	2311	4822 126 14305	100nF 10% 16V 0603	2545	3198 016 31020	1nF 25V 0603
2179	4822 126 14305	100nF 10% 16V 0603	2318	5322 124 41945	22µF 20% 35V	2546	3198 016 31020	1nF 25V 0603
2180	2238 586 59812	100nF 80-20% 50V	2328	5322 124 41945	22µF 20% 35V	2547	3198 016 31020	1nF 25V 0603
2180	4822 126 14305	100nF 10% 16V 0603	2335	4822 126 14305	100nF 10% 16V 0603	2548	3198 016 31020	

2566	3198 016 31020	1nF 25V 0603	2661	4822 126 14305	100nF 10% 16V 0603	2829	4822 124 23002	10µF 16V
2570	3198 016 31020	1nF 25V 0603	2662	2238 586 59812	100nF 80-20% 50V	2830	2238 586 59812	100nF 80-20% 50V
2572	2238 586 59812	100nF 80-20% 50V	2662	4822 126 14305	100nF 10% 16V 0603	2830	4822 126 14305	100nF 10% 16V 0603
2572	4822 126 14305	100nF 10% 16V 0603	2663	2238 586 59812	100nF 80-20% 50V	2831	2238 586 59812	100nF 80-20% 50V
2573	4822 124 23002	10µF 16V	2663	4822 126 14305	100nF 10% 16V 0603	2833	4822 126 14247	1.5nF 50V
2574	2238 586 59812	100nF 80-20% 50V	2670	2238 586 59812	100nF 80-20% 50V	2834	4822 124 23002	10µF 16V
2574	4822 126 14305	100nF 10% 16V 0603	2670	4822 126 14305	100nF 10% 16V 0603	2837	4822 126 13881	470pF 5% 50V
2581	2238 586 59812	100nF 80-20% 50V	2671	2238 586 59812	100nF 80-20% 50V	2838	4822 126 13881	470pF 5% 50V
2581	4822 126 14305	100nF 10% 16V 0603	2671	4822 126 14305	100nF 10% 16V 0603	2839	4822 126 13881	470pF 5% 50V
2583	2238 586 59812	100nF 80-20% 50V	2672	2238 586 59812	100nF 80-20% 50V	2840	4822 126 11669	27pF 10% 50V
2583	4822 126 14305	100nF 10% 16V 0603	2672	4822 126 14305	100nF 10% 16V 0603	2842	2238 586 59812	100nF 80-20% 50V
2584	2238 586 59812	100nF 80-20% 50V	2673	2238 586 59812	100nF 80-20% 50V	2842	4822 126 14305	100nF 10% 16V 0603
2584	4822 126 14305	100nF 10% 16V 0603	2673	4822 126 14305	100nF 10% 16V 0603	2843	4822 126 11669	27pF 10% 50V
2600	2238 586 59812	100nF 80-20% 50V	2694	3198 016 31080	1pF 50V 0603	2844	3198 016 31020	1nF 25V 0603
2600	4822 126 14305	100nF 10% 16V 0603	2695	3198 016 31080	1pF 50V 0603	2845	4822 126 13883	220pF 5% 50V
2601	2238 586 59812	100nF 80-20% 50V	2696	3198 016 31080	1pF 50V 0603	2848	4822 126 11669	27pF 10% 50V
2601	4822 126 14305	100nF 10% 16V 0603	2697	3198 016 31080	1pF 50V 0603	2849	3198 016 31020	1nF 25V 0603
2602	2238 586 59812	100nF 80-20% 50V	2698	3198 016 31080	1pF 50V 0603	2850	4822 126 11669	27pF 10% 50V
2602	4822 126 14305	100nF 10% 16V 0603	2699	3198 016 31080	1pF 50V 0603	2852	2238 586 59812	100nF 80-20% 50V
2603	2238 586 59812	100nF 80-20% 50V	2711	2020 552 94427	100pF 5% 50V	2852	4822 126 14305	100nF 10% 16V 0603
2603	4822 126 14305	100nF 10% 16V 0603	2711	4822 122 31765	100pF 2% 63V 1206	2853	4822 126 11669	27pF 10% 50V
2604	2238 586 59812	100nF 80-20% 50V	2712	4822 126 14472	1µF 10% 10V	2854	3198 016 31020	1nF 25V 0603
2604	4822 126 14305	100nF 10% 16V 0603	2715	2238 586 59812	100nF 80-20% 50V	2857	3198 016 31020	1nF 25V 0603
2605	2238 586 59812	100nF 80-20% 50V	2715	4822 126 14305	100nF 10% 16V 0603	2858	4822 126 11669	27pF 10% 50V
2605	4822 126 14305	100nF 10% 16V 0603	2716	4822 122 33777	47pF 5% 63V	2861	2238 586 59812	100nF 80-20% 50V
2606	2238 586 59812	100nF 80-20% 50V	2717	4822 126 14472	1µF 10% 10V	2861	4822 126 14305	100nF 10% 16V 0603
2606	4822 126 14305	100nF 10% 16V 0603	2721	2020 552 94427	100pF 5% 50V	2862	4822 122 33777	47pF 5% 63V
2607	2238 586 59812	100nF 80-20% 50V	2721	4822 122 31765	100pF 2% 63V 1206	2863	4822 126 14472	1µF 10% 10V
2607	4822 126 14305	100nF 10% 16V 0603	2722	4822 126 14472	1µF 10% 10V	2865	4822 122 33777	47pF 5% 63V
2608	2238 586 59812	100nF 80-20% 50V	2726	4822 122 33777	47pF 5% 63V	2867	3198 016 31020	1nF 25V 0603
2608	4822 126 14305	100nF 10% 16V 0603	2727	4822 126 14472	1µF 10% 10V	2867	4822 126 13879	220nF 20% 16V
2609	2238 586 59812	100nF 80-20% 50V	2731	2020 552 94427	100pF 5% 50V	2868	4822 126 14472	1µF 10% 10V
2609	4822 126 14305	100nF 10% 16V 0603	2731	4822 122 31765	100pF 2% 63V 1206	2869	4822 126 14247	1.5nF 50V
2610	2238 586 59812	100nF 80-20% 50V	2732	4822 126 14472	1µF 10% 10V	2870	2238 586 59812	100nF 80-20% 50V
2610	4822 126 14305	100nF 10% 16V 0603	2735	2238 586 59812	100nF 80-20% 50V	2870	4822 126 14305	100nF 10% 16V 0603
2611	2238 586 59812	100nF 80-20% 50V	2736	4822 122 33777	47pF 5% 63V	2874	2238 586 59812	100nF 80-20% 50V
2611	4822 126 14305	100nF 10% 16V 0603	2737	4822 126 14472	1µF 10% 10V	2874	4822 126 14305	100nF 10% 16V 0603
2612	2238 586 59812	100nF 80-20% 50V	2741	2020 552 94427	100pF 5% 50V	2879	4822 126 11669	27pF 10% 50V
2612	4822 126 14305	100nF 10% 16V 0603	2741	4822 122 31765	100pF 2% 63V 1206	2880	2238 586 59812	100nF 80-20% 50V
2613	2238 586 59812	100nF 80-20% 50V	2742	4822 126 14472	1µF 10% 10V	2880	4822 126 14305	100nF 10% 16V 0603
2613	4822 126 14305	100nF 10% 16V 0603	2746	4822 122 33777	47pF 5% 63V	2881	2238 586 59812	100nF 80-20% 50V
2614	2238 586 59812	100nF 80-20% 50V	2747	4822 126 14472	1µF 10% 10V	2881	4822 126 14305	100nF 10% 16V 0603
2614	4822 126 14305	100nF 10% 16V 0603	2751	2020 552 94427	100pF 5% 50V	2882	2238 586 59812	100nF 80-20% 50V
2615	2238 586 59812	100nF 80-20% 50V	2752	4822 126 14472	1µF 10% 10V	2882	4822 126 14305	100nF 10% 16V 0603
2615	4822 126 14305	100nF 10% 16V 0603	2755	2238 586 59812	100nF 80-20% 50V			
2616	2238 586 59812	100nF 80-20% 50V	2756	4822 122 33777	47pF 5% 63V			
2616	4822 126 14305	100nF 10% 16V 0603	2757	4822 126 14472	1µF 10% 10V			
2617	2238 586 59812	100nF 80-20% 50V	2761	2020 552 94427	100pF 5% 50V			
2617	4822 126 14305	100nF 10% 16V 0603	2762	4822 126 14472	1µF 10% 10V			
2618	2238 586 59812	100nF 80-20% 50V	2766	4822 122 33777	47pF 5% 63V			
2618	4822 126 14305	100nF 10% 16V 0603	2767	4822 126 14472	1µF 10% 10V			
2619	2238 586 59812	100nF 80-20% 50V	2771	2020 552 94427	100pF 5% 50V			
2619	4822 126 14305	100nF 10% 16V 0603	2772	4822 126 14472	1µF 10% 10V			
2620	2238 586 59812	100nF 80-20% 50V	2775	2020 552 94427	100pF 5% 50V			
2620	4822 126 14305	100nF 10% 16V 0603	2776	4822 126 14472	1µF 10% 10V			
2621	2238 586 59812	100nF 80-20% 50V	2779	2020 552 94427	100pF 5% 50V			
2621	4822 126 14305	100nF 10% 16V 0603	2780	4822 126 14472	1µF 10% 10V			
2622	2238 586 59812	100nF 80-20% 50V	2783	2020 552 94427	100pF 5% 50V			
2622	4822 126 14305	100nF 10% 16V 0603	2784	4822 126 14472	1µF 10% 10V			
2623	2238 586 59812	100nF 80-20% 50V	2787	2020 552 94427	100pF 5% 50V			
2623	4822 126 14305	100nF 10% 16V 0603	2788	4822 126 14472	1µF 10% 10V			
2624	2238 586 59812	100nF 80-20% 50V	2791	2020 552 94427	100pF 5% 50V			
2624	4822 126 14305	100nF 10% 16V 0603	2792	4822 126 14472	1µF 10% 10V			
2625	2238 586 59812	100nF 80-20% 50V	2794	4822 126 14472	1µF 10% 10V			
2625	4822 126 14305	100nF 10% 16V 0603	2795	4822 126 14472	1µF 10% 10V			
2628	2238 586 59812	100nF 80-20% 50V	2796	4822 126 14472	1µF 10% 10V			
2628	4822 126 14305	100nF 10% 16V 0603	2797	4822 126 14472	1µF 10% 10V			
2629	4822 122 33741	10pF 10% 50V	2798	2238 586 59812	100nF 80-20% 50V			
2630	2238 586 59812	100nF 80-20% 50V	2799	5322 124 41945	22µF 20% 35V			
2630	4822 126 14305	100nF 10% 16V 0603	2800	4822 124 12095	100µF 20% 16V			
2640	2238 586 59812	100nF 80-20% 50V	2801	2238 586 59812	100nF 80-20% 50V			
2640	4822 126 14305	100nF 10% 16V 0603	2802	4822 124 23002	10µF 16V			
2641	3198 016 31020	1nF 25V 0603	2803	4822 124 23002	10µF 16V			
2642	4822 124 23002	10µF 16V	2804	3198 016 31020	1nF 25V 0603			
2643	4822 124 23002	10µF 16V	2810	4822 124 12095	100µF 20% 16V			
2644	4822 124 23002	10µF 16V	2811	3198 016 31020	1nF 25V 0603			
2645	4822 124 23002	10µF 16V	2812	3198 016 31020	1nF 25V 0603			
2646	4822 124 23002	10µF 16V	2813	3198 016 31020	1nF 25V 0603			
2647	4822 124 23002	10µF 16V	2814	4822 126 14585	100nF 10% 50V			
2648	4822 124 23002	10µF 16V	2815	3198 016 31020	1nF 25V 0603			
2649	4822 124 23002	10µF 16V	2816	4822 124 23002	10µF 16V			
2655	2238 586 59812	100nF 80-20% 50V	2817	2238 586 59812	100nF 80-20% 50V			
2655	4822 126 14305	100nF 10% 16V 0603	2817	4822 126 14305	100nF 10% 16V 0603			
2656	2238 586 59812	100nF 80-20% 50V	2818	3198 016 31020	1nF 25V 0603			
2656	4822 126 14305	100nF 10% 16V 0603	2819	3198 016 31020	1nF 25V 0603			
2657	2238 586 59812	100nF 80-20% 50V	2820	4822 124 23002	10µF 16V			
2657	4822 126 14305	100nF 10% 16V 0603	2821	4822 124 23002	10µF 16V			
2658	2238 586 59812	100nF 80-20% 50V	2822	4822 126 14247	1.5nF 50V			
2658	4822 126 14305	100nF 10% 16V 0603	2823	4822 124 23002	10µF 16V			
2659	2238 586 59812	100nF 80-20% 50V	2824	4822 126 14247	1.5nF 50V			
2659	4822 126 14305	100nF 10% 16V 0603	2825	3198 016 31020	1nF 25V 0603			
2660	2238 586 59812	100nF 80-20% 50V	2826	4822 126 14472	1µF 10% 10V			
2660	4822 126 14305	100nF 10% 16V 0603	2827	4822 126 14472	1µF 10% 10V			
2661	2238 586 59812	100nF 80-20% 50V	2828	3198 016 31020	1nF 25V 0603			



3000	4822 051 30474	470k 5% 0.062W
3001	4822 051 30759	75Ω 5% 0.062W
3002	4822 051 30222	2k2 5% 0.062W
3003	4822 051 30472	4k7 5% 0.062W
3004	4822 051 30474	470k 5% 0.062W
3005	4822	

3075	4822 051 30561	560Ω 5% 0.062W	3250	4822 051 30101	100Ω 5% 0.062W	3363	4822 051 30472	4k7 5% 0.062W
3076	4822 051 30759	75Ω 5% 0.062W	3251	4822 051 30101	100Ω 5% 0.062W	3364	4822 051 30103	10k 5% 0.062W
3077	4822 051 30271	270Ω 5% 0.062W	3260	4822 051 30472	4k7 5% 0.062W	3365	4822 051 30474	470k 5% 0.062W
3078	4822 051 30223	22k 5% 0.062W	3261	4822 051 30471	470Ω 5% 0.062W	3366	4822 117 12925	47k 1% 0.063W 0603
3079	4822 051 30221	220Ω 5% 0.062W	3263	4822 051 30472	4k7 5% 0.062W	3367	4822 051 30103	10k 5% 0.062W
3080	4822 051 30561	560Ω 5% 0.062W	3274	5322 117 12534	18Ω 2% 0.1W	3368	4822 051 30102	1k 5% 0.062W
3081	4822 051 30759	75Ω 5% 0.062W	3275	5322 117 12534	18Ω 2% 0.1W	3369	4822 051 30472	4k7 5% 0.062W
3082	4822 051 30271	270Ω 5% 0.062W	3276	5322 117 12534	18Ω 2% 0.1W	3370	4822 051 30474	470k 5% 0.062W
3083	4822 051 30223	22k 5% 0.062W	3277	2322 734 65609	56Ω 1% 0805	3370	4822 051 30682	6k8 5% 0.062W
3084	4822 051 30221	220Ω 5% 0.062W	3278	2322 734 65609	56Ω 1% 0805	3371	4822 051 30101	100Ω 5% 0.062W
3085	4822 051 30561	560Ω 5% 0.062W	3279	2322 734 65609	56Ω 1% 0805	3372	4822 051 30103	10k 5% 0.062W
3086	4822 117 11817	1k2 1% 0.062W	3284	4822 051 30101	100Ω 5% 0.062W	3373	4822 051 30222	2k2 5% 0.062W
3087	4822 117 12968	820Ω 5% 0.62W	3285	4822 051 30101	100Ω 5% 0.062W	3374	4822 051 30102	1k 5% 0.062W
3088	4822 117 12968	820Ω 5% 0.62W	3286	3198 031 11010	4 x 100Ω 5% 1206	3375	4822 117 13632	100k 1% 0.62W 0603
3089	4822 117 11817	1k2 1% 0.062W	3289	3198 031 11010	4 x 100Ω 5% 1206	3376	4822 051 30472	4k7 5% 0.062W
3090	4822 051 30561	560Ω 5% 0.062W	3290	3198 031 11010	4 x 100Ω 5% 1206	3377	4822 051 30101	100Ω 5% 0.062W
3091	4822 051 30331	330Ω 5% 0.062W	3291	3198 031 11010	4 x 100Ω 5% 1206	3378	4822 051 30102	1k 5% 0.062W
3092	4822 051 30331	330Ω 5% 0.062W	3292	3198 031 11010	4 x 100Ω 5% 1206	3379	4822 051 30222	2k2 5% 0.062W
3093	4822 051 30561	560Ω 5% 0.062W	3293	4822 051 30101	100Ω 5% 0.062W	3380	3198 031 11010	4 x 100Ω 5% 1206
3094	4822 051 30102	1k 5% 0.062W	3294	4822 051 30102	1k 5% 0.062W	3381	3198 031 11010	4 x 100Ω 5% 1206
3095	4822 051 30102	1k 5% 0.062W	3294	4822 051 30333	33k 5% 0.062W	3382	3198 031 11010	4 x 100Ω 5% 1206
3096	4822 051 30471	470Ω 5% 0.062W	3295	4822 051 30102	1k 5% 0.062W	3383	3198 031 11010	4 x 100Ω 5% 1206
3097	4822 051 30391	390Ω 5% 0.062W	3295	4822 051 30103	10k 5% 0.062W	3384	4822 051 30101	100Ω 5% 0.062W
3098	4822 051 30102	1k 5% 0.062W	3296	4822 051 30474	470k 5% 0.062W	3385	4822 051 30102	1k 5% 0.062W
3099	4822 051 30102	1k 5% 0.062W	3297	4822 051 30103	10k 5% 0.062W	3386	4822 051 30222	2k2 5% 0.062W
3100	4822 051 30152	1k5 5% 0.062W	3298	4822 051 30103	10k 5% 0.062W	3387	4822 051 30222	2k2 5% 0.062W
3101	4822 051 30681	680Ω 5% 0.062W	3299	4822 051 30103	10k 5% 0.062W	3388	4822 051 30102	1k 5% 0.062W
3102	4822 117 12903	1k8 1% 0.063W 0603	3300	4822 051 30153	15k 5% 0.062W	3389	4822 051 30101	100Ω 5% 0.062W
3103	4822 051 30391	390Ω 5% 0.062W	3301	4822 051 30103	10k 5% 0.062W	3390	4822 051 30102	1k 5% 0.062W
3104	4822 051 30222	2k2 5% 0.062W	3302	4822 051 30102	1k 5% 0.062W	3391	4822 051 30333	33k 5% 0.062W
3105	4822 117 11817	1k2 1% 0.062W	3303	4822 051 30472	4k7 5% 0.062W	3392	4822 051 30101	100Ω 5% 0.062W
3106	4822 117 11817	1k2 1% 0.062W	3304	4822 051 30689	68Ω 5% 0.063W 0603	3393	4822 051 30102	1k 5% 0.062W
3107	4822 051 30222	2k2 5% 0.062W	3305	4822 051 30472	4k7 5% 0.062W	3394	3198 031 11010	4 x 100Ω 5% 1206
3108	4822 051 30222	2k2 5% 0.062W	3306	4822 051 30153	15k 5% 0.062W	3394	4822 051 30222	2k2 5% 0.062W
3109	4822 117 11817	1k2 1% 0.062W	3307	4822 051 30472	4k7 5% 0.062W	3395	4822 051 30101	100Ω 5% 0.062W
3110	4822 117 11817	1k2 1% 0.062W	3308	4822 051 30271	270Ω 5% 0.062W	3398	3198 031 11010	4 x 100Ω 5% 1206
3111	4822 051 30222	2k2 5% 0.062W	3309	4822 051 30273	27k 5% 0.062W	3399	4822 051 30102	1k 5% 0.062W
3112	4822 051 30271	270Ω 5% 0.062W	3310	4822 051 30102	1k 5% 0.062W	3400	4822 051 30102	1k 5% 0.062W
3113	4822 051 30223	22k 5% 0.062W	3311	4822 051 30102	1k 5% 0.062W	3401	4822 051 30101	100Ω 5% 0.062W
3115	4822 051 30102	1k 5% 0.062W	3312	4822 117 12903	1k8 1% 0.063W 0603	3402	3198 031 11010	4 x 100Ω 5% 1206
3116	4822 051 30271	270Ω 5% 0.062W	3313	4822 051 30103	10k 5% 0.062W	3404	3198 031 11010	4 x 100Ω 5% 1206
3117	4822 051 30223	22k 5% 0.062W	3314	4822 117 12903	1k8 1% 0.063W 0603	3406	3198 031 11010	4 x 100Ω 5% 1206
3119	4822 051 30102	1k 5% 0.062W	3315	4822 051 30471	470Ω 5% 0.062W	3410	4822 051 30222	2k2 5% 0.062W
3120	4822 051 30271	270Ω 5% 0.062W	3316	4822 051 30153	15k 5% 0.062W	3411	4822 051 30332	3k3 5% 0.062W
3121	4822 051 30223	22k 5% 0.062W	3317	4822 051 30472	4k7 5% 0.062W	3413	4822 051 30222	2k2 5% 0.062W
3123	4822 051 30102	1k 5% 0.062W	3318	4822 051 30271	270Ω 5% 0.062W	3414	4822 051 30222	2k2 5% 0.062W
3134	4822 051 30271	270Ω 5% 0.062W	3319	4822 051 30273	27k 5% 0.062W	3414	4822 051 30472	4k7 5% 0.062W
3135	4822 051 30223	22k 5% 0.062W	3320	4822 051 30102	1k 5% 0.062W	3415	4822 051 30222	2k2 5% 0.062W
3136	4822 051 30561	560Ω 5% 0.062W	3321	4822 051 30102	1k 5% 0.062W	3415	4822 051 30472	4k7 5% 0.062W
3137	4822 051 30271	270Ω 5% 0.062W	3322	4822 117 12903	1k8 1% 0.063W 0603	3417	4822 051 30221	220Ω 5% 0.062W
3138	4822 051 30223	22k 5% 0.062W	3323	4822 051 30103	10k 5% 0.062W	3418	4822 051 30102	1k 5% 0.062W
3139	4822 051 30561	560Ω 5% 0.062W	3324	4822 117 12903	1k8 1% 0.063W 0603	3419	4822 051 30392	3k9 5% 0.063W 0603
3140	4822 051 30271	270Ω 5% 0.062W	3325	4822 051 30471	470Ω 5% 0.062W	3420	4822 051 30222	2k2 5% 0.062W
3141	4822 051 30223	22k 5% 0.062W	3326	4822 051 30102	1k 5% 0.062W	3421	4822 051 30102	1k 5% 0.062W
3142	4822 051 30561	560Ω 5% 0.062W	3326	4822 051 30333	33k 5% 0.062W	3422	4822 051 30152	1k5 5% 0.062W
3144	4822 051 30271	270Ω 5% 0.062W	3327	4822 051 30102	1k 5% 0.062W	3423	4822 117 12925	47k 1% 0.063W 0603
3145	4822 051 30223	22k 5% 0.062W	3327	4822 051 30103	10k 5% 0.062W	3424	4822 051 30332	3k3 5% 0.062W
3146	4822 051 30561	560Ω 5% 0.062W	3328	4822 051 30271	270Ω 5% 0.062W	3426	4822 051 30332	3k3 5% 0.062W
3147	4822 051 30271	270Ω 5% 0.062W	3329	4822 051 30273	27k 5% 0.062W	3428	4822 051 30101	100Ω 5% 0.062W
3148	4822 051 30223	22k 5% 0.062W	3330	4822 051 30102	1k 5% 0.062W	3429	4822 051 30101	100Ω 5% 0.062W
3149	4822 051 30561	560Ω 5% 0.062W	3331	4822 051 30102	1k 5% 0.062W	3430	4822 051 30472	4k7 5% 0.062W
3150	4822 051 30271	270Ω 5% 0.062W	3332	4822 117 12903	1k8 1% 0.063W 0603	3431	4822 051 30101	100Ω 5% 0.062W
3151	4822 051 30223	22k 5% 0.062W	3333	4822 051 30103	10k 5% 0.062W	3432	4822 051 30472	4k7 5% 0.062W
3152	4822 051 30561	560Ω 5% 0.062W	3334	4822 117 12903	1k8 1% 0.063W 0603	3433	4822 051 30101	100Ω 5% 0.062W
3153	4822 051 30271	270Ω 5% 0.062W	3335	4822 051 30471	470Ω 5% 0.062W	3435	4822 051 30273	27k 5% 0.062W
3154	4822 051 30223	22k 5% 0.062W	3336	4822 051 30103	10k 5% 0.062W	3436	4822 117 12891	220k 1%
3155	4822 051 30561	560Ω 5% 0.062W	3337	4822 051 30103	10k 5% 0.062W	3448	3198 031 11010	4 x 100Ω 5% 1206
3156	4822 051 30271	270Ω 5% 0.062W	3338	4822 051 30333	33k 5% 0.062W	3449	3198 031 11010	4 x 100Ω 5% 1206
3157	4822 051 30223	22k 5% 0.062W	3339	4822 051 30103	10k 5% 0.062W	3450	4822 051 30101	100Ω 5% 0.062W
3158	4822 051 30561	560Ω 5% 0.062W	3340	4822 051 30103	10k 5% 0.062W	3451	3198 031 11010	4 x 100Ω 5% 1206
3159	4822 051 30271	270Ω 5% 0.062W	3341	4822 051 30333	33k 5% 0.062W	3452	3198 031 11010	4 x 100Ω 5% 1206
3160	4822 051 30223	22k 5% 0.062W	3342	4822 051 30102	1k 5% 0.062W	3453	3198 031 11010	4 x 100Ω 5% 1206
3161	4822 051 30561	560Ω 5% 0.062W	3343	4822 051 30333	33k 5% 0.062W	3460	3198 031 11010	4 x 100Ω 5% 1206
3164	4822 051 30471	470Ω 5% 0.062W	3344	4822 051 30472	4k7 5% 0.062W	3461	3198 031 11010	4 x 100Ω 5% 1206
3200	4822 051 30101	100Ω 5% 0.062W	3345	4822 051 30101	100Ω 5% 0.062W	3462	3198 031 11010	4 x 100Ω 5% 1206
3201	4822 051 30008	Jumper 0603	3346	4822 051 30103	10k 5% 0.062W	3463	3198 031 11010	4 x 100Ω 5% 1206
3201	4822 051 30479	47Ω 5% 0.062W	3347	4822 051 30101	100Ω 5% 0.062W	3464	3198 031 11010	4 x 100Ω 5% 1206
3203	4822 051 30101	100Ω 5% 0.062W	3348	4822 051 30474	470k 5% 0.062W	3483	4822 051 30471	470Ω 5% 0.062W
3204	4822 051 30101	100Ω 5% 0.062W	3348	4822 117 13632	100k 1% 0.62W 0603	3485	4822 051 30222	2k2 5% 0.062W
3205	4822 051 30101	100Ω 5% 0.062W	3349	4822 051 30103	10k 5% 0.062W	3486	4822 051 30222	2k2 5% 0.062W
3206	4822 051 30102	1k 5% 0.062W	3349	4822 051 30333	33k 5% 0.062W	3487	4822 051 30222	2k2 5% 0.062W
3207	4822 051 30103	10k 5% 0.062W	3350	4822 051 30101	100Ω 5% 0.062W	3488	4822 051 30222	2k2 5% 0.062W
3208	4822 051 30332	3k3 5% 0.062W	3351	4822 051 30689	68Ω 5% 0.063W 0603	3489	4822 051 30222	2k2 5% 0.062W
3209	4822 051 30101	100Ω 5% 0.062W	3352	4822 051 30103	10k 5% 0.062W	3490	4822 051 30102	1k 5% 0.062W
3210	4822 051 30101	100Ω 5% 0.062W	3353	4822 051 30101	100Ω 5% 0.062W	3494	3198 031 14710	4 x 470Ω 5% 1206

3514	4822 051 30472	4k7 5% 0.062W	3680	4822 051 30008	Jumper 0603	3847	4822 051 30393	39k 5% 0.062W
3515	4822 117 12925	47k 1% 0.063W 0603	3680	4822 051 30101	100Ω 5% 0.062W	3848	4822 051 30393	39k 5% 0.062W
3516	4822 117 12925	47k 1% 0.063W 0603	3681	4822 051 30222	2k2 5% 0.062W	3849	4822 051 30101	100Ω 5% 0.062W
3517	4822 051 30102	1k 5% 0.062W	3681	4822 051 30332	3k3 5% 0.062W	3850	4822 051 30223	22k 5% 0.062W
3518	4822 117 13632	100k 1% 0.62W 0603	3682	4822 051 30471	470Ω 5% 0.062W	3851	4822 051 30223	22k 5% 0.062W
3519	4822 051 30222	2k2 5% 0.062W	3684	4822 051 30008	Jumper 0603	3853	4822 051 30393	39k 5% 0.062W
3520	4822 051 30222	2k2 5% 0.062W	3684	4822 051 30101	100Ω 5% 0.062W	3854	4822 051 30101	100Ω 5% 0.062W
3530	4822 051 30101	100Ω 5% 0.062W	3685	4822 051 30222	2k2 5% 0.062W	3855	4822 051 30101	100Ω 5% 0.062W
3531	4822 051 30101	100Ω 5% 0.062W	3685	4822 051 30332	3k3 5% 0.062W	3856	4822 051 30223	22k 5% 0.062W
3532	4822 051 30101	100Ω 5% 0.062W	3686	4822 051 30471	470Ω 5% 0.062W	3857	4822 051 30393	39k 5% 0.062W
3533	4822 051 30103	10k 5% 0.062W	3710	4822 051 30333	33k 5% 0.062W	3858	4822 051 30393	39k 5% 0.062W
3534	4822 051 30103	10k 5% 0.062W	3711	4822 051 30102	1k 5% 0.062W	3859	4822 051 30101	100Ω 5% 0.062W
3535	4822 051 30103	10k 5% 0.062W	3713	4822 051 30101	100Ω 5% 0.062W	3860	4822 051 30332	3k3 5% 0.062W
3536	4822 051 30103	10k 5% 0.062W	3714	4822 051 30223	22k 5% 0.062W	3860	4822 117 12902	8k2 1% 0.063W 0603
3536	4822 051 30222	2k2 5% 0.062W	3716	4822 051 30153	15k 5% 0.062W	3861	4822 051 30223	22k 5% 0.062W
3537	4822 051 30103	10k 5% 0.062W	3717	4822 051 30333	33k 5% 0.062W	3862	4822 051 30273	27k 5% 0.062W
3538	4822 051 30103	10k 5% 0.062W	3718	4822 051 30103	10k 5% 0.062W	3863	4822 051 30332	3k3 5% 0.062W
3539	4822 051 30103	10k 5% 0.062W	3719	4822 051 30333	33k 5% 0.062W	3863	4822 117 12902	8k2 1% 0.063W 0603
3540	4822 051 30101	100Ω 5% 0.062W	3720	4822 051 30333	33k 5% 0.062W	3864	4822 051 30223	22k 5% 0.062W
3541	4822 051 30101	100Ω 5% 0.062W	3721	4822 051 30102	1k 5% 0.062W	3865	4822 051 30273	27k 5% 0.062W
3545	4822 051 30221	220Ω 5% 0.062W	3723	4822 051 30101	100Ω 5% 0.062W	3866	4822 051 30101	100Ω 5% 0.062W
3547	4822 051 30102	1k 5% 0.062W	3724	4822 051 30223	22k 5% 0.062W	3867	4822 051 30101	100Ω 5% 0.062W
3548	4822 051 30102	1k 5% 0.062W	3726	4822 051 30153	15k 5% 0.062W	3870	4822 051 30101	100Ω 5% 0.062W
3550	4822 051 30101	100Ω 5% 0.062W	3730	4822 051 30333	33k 5% 0.062W	3879	4822 117 12925	47k 1% 0.063W 0603
3551	4822 051 30101	100Ω 5% 0.062W	3731	4822 051 30331	330Ω 5% 0.062W	3880	4822 051 30471	470Ω 5% 0.062W
3552	4822 051 30101	100Ω 5% 0.062W	3733	4822 051 30101	100Ω 5% 0.062W	3900	4822 051 30472	4k7 5% 0.062W
3553	4822 051 30101	100Ω 5% 0.062W	3734	4822 051 30223	22k 5% 0.062W	3901	4822 051 30333	33k 5% 0.062W
3554	4822 051 30103	10k 5% 0.062W	3736	4822 051 30153	15k 5% 0.062W	3902	4822 051 30471	470Ω 5% 0.062W
3557	4822 051 30101	100Ω 5% 0.062W	3740	4822 051 30333	33k 5% 0.062W	3903	4822 051 30471	470Ω 5% 0.062W
3558	4822 051 30101	100Ω 5% 0.062W	3741	4822 051 30331	330Ω 5% 0.062W	3904	4822 051 30471	470Ω 5% 0.062W
3559	4822 051 30101	100Ω 5% 0.062W	3743	4822 051 30101	100Ω 5% 0.062W	3905	4822 051 30103	10k 5% 0.062W
3560	4822 051 30101	100Ω 5% 0.062W	3744	4822 051 30223	22k 5% 0.062W	3906	4822 051 30103	10k 5% 0.062W
3562	4822 051 30103	10k 5% 0.062W	3746	4822 051 30153	15k 5% 0.062W	3907	4822 051 30103	10k 5% 0.062W
3564	4822 051 30101	100Ω 5% 0.062W	3750	4822 051 30333	33k 5% 0.062W	3908	4822 051 30103	10k 5% 0.062W
3565	4822 051 30101	100Ω 5% 0.062W	3751	4822 051 30102	1k 5% 0.062W	3909	4822 051 30103	10k 5% 0.062W
3568	4822 051 30008	Jumper 0603	3753	4822 051 30101	100Ω 5% 0.062W	3909	4822 117 13632	100k 1% 0.62W 0603
3570	4822 051 30101	100Ω 5% 0.062W	3754	4822 051 30223	22k 5% 0.062W	3910	4822 051 30102	1k 5% 0.062W
3571	4822 051 30101	100Ω 5% 0.062W	3756	4822 051 30153	15k 5% 0.062W	3911	4822 117 12925	47k 1% 0.063W 0603
3575	4822 051 30102	1k 5% 0.062W	3760	4822 051 30333	33k 5% 0.062W	3912	4822 051 30472	4k7 5% 0.062W
3580	4822 051 30472	4k7 5% 0.062W	3761	4822 051 30102	1k 5% 0.062W	3913	4822 051 30101	100Ω 5% 0.062W
3581	4822 051 30101	100Ω 5% 0.062W	3763	4822 051 30101	100Ω 5% 0.062W	3917	4822 051 30472	4k7 5% 0.062W
3582	4822 051 30101	100Ω 5% 0.062W	3764	4822 051 30223	22k 5% 0.062W	3918	4822 051 30102	1k 5% 0.062W
3583	4822 051 30472	4k7 5% 0.062W	3766	4822 051 30153	15k 5% 0.062W	3919	4822 051 30102	1k 5% 0.062W
3590	4822 051 30332	3k3 5% 0.062W	3771	4822 051 30102	1k 5% 0.062W	3922	4822 051 30102	1k 5% 0.062W
3591	4822 051 30332	3k3 5% 0.062W	3772	4822 051 30332	3k3 5% 0.062W	3923	4822 051 30472	4k7 5% 0.062W
3592	4822 051 30332	3k3 5% 0.062W	3773	4822 051 30103	10k 5% 0.062W			
3593	4822 051 30332	3k3 5% 0.062W	3775	4822 051 30102	1k 5% 0.062W			
3594	4822 051 30472	4k7 5% 0.062W	3776	4822 051 30332	3k3 5% 0.062W			
3600	4822 051 30332	3k3 5% 0.062W	3777	4822 051 30103	10k 5% 0.062W			
3601	4822 051 30332	3k3 5% 0.062W	3779	4822 051 30102	1k 5% 0.062W			
3602	4822 051 30101	100Ω 5% 0.062W	3780	4822 051 30332	3k3 5% 0.062W			
3603	4822 051 30101	100Ω 5% 0.062W	3781	4822 051 30103	10k 5% 0.062W			
3604	4822 051 30101	100Ω 5% 0.062W	3783	4822 051 30102	1k 5% 0.062W			
3605	4822 051 30101	100Ω 5% 0.062W	3784	4822 051 30332	3k3 5% 0.062W			
3606	4822 051 30101	100Ω 5% 0.062W	3785	4822 051 30103	10k 5% 0.062W			
3607	4822 051 30101	100Ω 5% 0.062W	3787	4822 051 30102	1k 5% 0.062W			
3608	4822 051 30101	100Ω 5% 0.062W	3788	4822 051 30332	3k3 5% 0.062W			
3609	4822 051 30101	100Ω 5% 0.062W	3789	4822 051 30103	10k 5% 0.062W			
3610	4822 051 30479	47Ω 5% 0.062W	3791	4822 051 30102	1k 5% 0.062W			
3615	4822 051 30101	100Ω 5% 0.062W	3792	4822 051 30332	3k3 5% 0.062W			
3620	4822 051 30103	10k 5% 0.062W	3793	4822 051 30103	10k 5% 0.062W			
3621	4822 051 30103	10k 5% 0.062W	3794	4822 051 30101	100Ω 5% 0.062W			
3622	4822 051 30479	47Ω 5% 0.062W	3795	4822 051 30101	100Ω 5% 0.062W			
3623	4822 051 30102	1k 5% 0.062W	3796	4822 051 30472	4k7 5% 0.062W			
3628	4822 051 30101	100Ω 5% 0.062W	3797	4822 051 30472	4k7 5% 0.062W			
3630	4822 051 30102	1k 5% 0.062W	3798	4822 051 30333	33k 5% 0.062W			
3631	4822 051 30102	1k 5% 0.062W	3800	4822 051 30331	330Ω 5% 0.062W			
3632	4822 051 30332	3k3 5% 0.062W	3801	4822 051 30331	330Ω 5% 0.062W			
3633	4822 051 30472	4k7 5% 0.062W	3802	4822 051 30333	33k 5% 0.062W			
3634	4822 051 30332	3k3 5% 0.062W	3803	4822 117 13632	100k 1% 0.62W 0603			
3635	4822 051 30103	10k 5% 0.062W	3804	4822 051 30333	33k 5% 0.062W			
3636	4822 051 30332	3k3 5% 0.062W	3805	4822 117 13632	100k 1% 0.62W 0603			
3638	4822 051 30102	1k 5% 0.062W	3806	4822 117 13632	100k 1% 0.62W 0603			
3640	4822 051 30222	2k2 5% 0.062W	3807	4822 117 13632	100k 1% 0.62W 0603			
3641	4822 051 30102	1k 5% 0.062W	3808	4822 117 13632	100k 1% 0.62W 0603			
3653	4822 051 30102	1k 5% 0.062W	3809	4822 051 30333	33k 5% 0.062W			
3654	4822 051 30102	1k 5% 0.062W	3810	4822 051 30472	4k7 5% 0.062W			
3655	4822 051 30102	1k 5% 0.062W	3811	4822 051 30472	4k7 5% 0.062W			
3657	4822 051 30103	10k 5% 0.062W	3812	4822 051 30101	100Ω 5% 0.062W			
3658	4822 051 30103	10k 5% 0.062W	3813	4822 051 30101	100Ω 5% 0.062W			
3660	4822 051 30101	100Ω 5% 0.062W	3814	4822 051 30333	33k 5% 0.062W			
3661	4822 051 30101	100Ω 5% 0.062W	3815	4822 051 30101	100Ω 5% 0.062W			
3662	4822 051 30101	100Ω 5% 0.062W	3816	4822 051 30101	100Ω 5% 0.062W			
3663	4822 051 30101	100Ω 5% 0.062W	3817	4822 051 30101	100Ω 5% 0.062W			
3664	4822 051 30101	100Ω 5% 0.062W	3818	4822 051 30101	100Ω 5% 0.062W			
3665	4822 051 30101	100Ω 5% 0.062W	3820	4822 051 30333	33k 5% 0.062W			
3670	4822 051 30222	2k2 5% 0.062W	3821	4822 051 30103	10k 5% 0.062W			
3673	4822 051 30103	10k 5% 0.062W	3822	4822 051 30333	33k 5% 0.062W			
3674	4822 051 30101	100Ω 5% 0.062W	3840	4822 051 30223	22k 5% 0.062W			
3675	4822 051 30103	10k 5% 0.062W	3841	4822 051 30223	22k 5% 0.062W			
3676	4822 051 30101	100Ω 5% 0.062W	3843	4822 051 30393	39k 5% 0.062W			
3677	4822 051 30101	100Ω 5% 0.062W	3844	4822 051 30101	100Ω 5% 0.062W			
3678	4822 051 30102	1k 5% 0.062W	3845	4822 051 30101	100Ω 5% 0.062W			
3679	4822 051 30101	100Ω 5% 0.062W	3846	4822 051 30223	22k 5% 0.062W			

5000	2422 549 43062	Bead 100MHz 600Ω
5008	2422 549 43062	Bead 100MHz 600Ω
5008	4822 157 11074	100μH 6%
5020	2422 549 43062	Bead 100MHz 600Ω
5060	2422 549 43062	Bead 100MHz 600Ω
5090	2422 549 43769	Bead 100MHz 30Ω
5140	2422 549 43062	Bead 100MHz 600Ω
5140	4822 157 11074	100μH 6%
5164	2422 549 43062	Bead 100MHz 600Ω
5164	4822 157 11074	100μH 6%
5167	2422 549 43769	Bead 100MHz 30Ω
5196	2422 549 43062	Bead 100MHz 600Ω
5196	4822 157 11074	100μH 6%
5197	2422 549 43769	Bead 100MHz 30Ω
5197	4822 157 11074	100μH 6%
5198	2422 549 43062	Bead 100MHz 600Ω
5198	4822 157 11074	100μH 6%
5199	2422 549 43062	Bead 100MHz 600Ω
5199	4822 157 11074	100μH 6%
5210	2422 549 43062	Bead 100MHz 600Ω
5214	2422 549 43062	Bead 100MHz 600Ω
5220	2422 549 43062	Bead 100MHz 600Ω
5221	2422 549 43062	Bead 100MHz 600Ω
5222	2422 549 43062	Bead 100MHz 600Ω
5223	2422 549 43062	Bead 100MHz 600Ω
5224	2422 549 43062	Bead 100MHz 600Ω
5228	2422 549 43062	Bead 100MHz 600Ω
5300	2422 549 43062	Bead 100MHz 600Ω
5300	4822 157 11074	100μH 6%
5302	2422 549 43062	Bead 100MHz 600Ω
5302	4822 157 11074	100μH 6%
5352	2422 549 43769	Bead 100MHz 30Ω
5352	4822 157 11074	100μH 6%
5520	2422 549 43062	Bead 100MHz 600Ω
5520	4822 157 11074	100μH 6%
5521	2422 549 43062	Bead 100MHz 600Ω
5521	4822 157 11074	100μH 6%
5522	2422 549 43062	Bead 100MHz 600Ω
5522	4822 157 11074	100μH 6%
5523	2422 549 43062	Bead 100MHz 600Ω
5523	4822 157 11074	100μH 6%
5524	2422 549 43062	Bead 100MHz 600Ω
5524	4822 157 11074	100μH 6%
5530	2422 549 43769	Bead 100MHz 30Ω
5530	4822 157 11074	100μH 6%

5541	2422 549 43062	Bead 100MHz 600Ω	6508	4822 130 10654	BAT254	7310	3198 010 42310	BC847BW
5541	4822 157 11074	100μH 6%	6509	4822 130 10654	BAT254	7310	9340 217 70115	BC847BW
5570	3198 018 51090	10μH 10% 0603	6630	4822 130 10654	BAT254	7311	9322 145 66668	TSH93ID
5572	2422 549 43769	Bead 100MHz 30Ω	6710	9322 149 10685	BZM55-C33	7315	3198 010 42310	BC847BW
5572	4822 157 11074	100μH 6%	6711	9322 149 10685	BZM55-C33	7315	9340 217 70115	BC847BW
5574	2422 549 43062	Bead 100MHz 600Ω	6720	9322 149 10685	BZM55-C33	7316	3198 010 42310	BC847BW
5574	4822 157 11074	100μH 6%	6721	9322 149 10685	BZM55-C33	7316	9340 217 70115	BC847BW
5628	2422 549 43062	Bead 100MHz 600Ω	6730	9322 149 10685	BZM55-C33	7318	3198 010 42310	BC847BW
5628	4822 157 11074	100μH 6%	6731	9322 149 10685	BZM55-C33	7318	9340 217 70115	BC847BW
5630	2422 549 43062	Bead 100MHz 600Ω	6740	9322 149 10685	BZM55-C33	7319	9340 217 70115	BC847BW
5630	4822 157 11074	100μH 6%	6741	9322 149 10685	BZM55-C33	7320	3198 010 42310	BC847BW
5642	2422 549 43062	Bead 100MHz 600Ω	6750	9322 149 10685	BZM55-C33	7320	9340 217 70115	BC847BW
5642	4822 157 11074	100μH 6%	6751	9322 149 10685	BZM55-C33	7321	3198 010 42310	BC847BW
5643	2422 549 43062	Bead 100MHz 600Ω	6760	9322 149 10685	BZM55-C33	7321	9340 217 70115	BC847BW
5643	4822 157 11074	100μH 6%	6761	9322 149 10685	BZM55-C33	7322	3198 010 42310	BC847BW
5644	2422 549 43062	Bead 100MHz 600Ω	6770	9322 149 10685	BZM55-C33	7322	9340 217 70115	BC847BW
5644	4822 157 11074	100μH 6%	6771	9322 149 10685	BZM55-C33	7323	3198 010 42310	BC847BW
5645	2422 549 43062	Bead 100MHz 600Ω	6774	9322 149 10685	BZM55-C33	7323	9340 217 70115	BC847BW
5645	4822 157 11074	100μH 6%	6775	9322 149 10685	BZM55-C33	7325	3198 010 42310	BC847BW
5646	2422 549 43062	Bead 100MHz 600Ω	6778	9322 149 10685	BZM55-C33	7325	9340 217 70115	BC847BW
5646	4822 157 11074	100μH 6%	6779	9322 149 10685	BZM55-C33	7326	3198 010 42310	BC847BW
5647	2422 549 43062	Bead 100MHz 600Ω	6782	9322 149 10685	BZM55-C33	7326	9340 217 70115	BC847BW
5647	4822 157 11074	100μH 6%	6783	9322 149 10685	BZM55-C33	7328	3198 010 42310	BC847BW
5648	2422 549 43062	Bead 100MHz 600Ω	6786	9322 149 10685	BZM55-C33	7328	9340 217 70115	BC847BW
5648	4822 157 11074	100μH 6%	6787	9322 149 10685	BZM55-C33	7333	9340 217 70115	BC847BW
5649	2422 549 43062	Bead 100MHz 600Ω	6790	9322 149 10685	BZM55-C33	7340	4822 209 15765	74HC4052D
5649	4822 157 11074	100μH 6%	6791	9322 149 10685	BZM55-C33	7340	9337 153 10118	74HCT4052D
5670	2422 549 43062	Bead 100MHz 600Ω	6802	9340 260 20115	BAW56W	7341	3198 010 42310	BC847BW
5670	4822 157 11074	100μH 6%	6805	9340 260 20115	BAW56W	7343	3198 010 42310	BC847BW
5672	2422 549 43062	Bead 100MHz 600Ω	6807	9340 260 20115	BAW56W	7352	9322 160 17668	ST202ECD
5672	4822 157 11074	100μH 6%	6820	4822 130 10654	BAT254	7356	9340 217 70115	BC847BW
5673	2422 549 43062	Bead 100MHz 600Ω	6821	4822 130 11422	PLVA2650A	7357	9340 217 70115	BC847BW
5673	4822 157 11074	100μH 6%				7358	9340 217 70115	BC847BW
5796	2422 549 43062	Bead 100MHz 600Ω				7360	3198 010 42310	BC847BW
5796	4822 157 11074	100μH 6%				7364	3198 010 42310	BC847BW
5798	2422 549 43062	Bead 100MHz 600Ω				7365	9340 217 70115	BC847BW
5810	2422 549 43062	Bead 100MHz 600Ω				7366	9340 217 70115	BC847BW
5810	4822 157 11074	100μH 6%				7367	9340 217 70115	BC847BW
5820	2422 549 43062	Bead 100MHz 600Ω				7370	4822 209 71585	74HCT4538N
5820	4822 157 11074	100μH 6%				7383	9352 684 81557	SAA5801H/015
5822	2422 549 43769	Bead 100MHz 30Ω				7430	9322 156 81668	M24C32-WMN6TNKSA
5822	4822 157 11074	100μH 6%				7435	3198 010 42310	BC847BW
5834	2422 549 43769	Bead 100MHz 30Ω				7500	9322 157 20668	MSM51V18165F-60J
5834	4822 157 11074	100μH 6%				7506	3122 357 00274	Software FM23GB-1.3-00274
5870	2422 549 43769	Bead 100MHz 30Ω						
5870	4822 157 11074	100μH 6%				7510	9352 499 60118	74LVC00AD
						7515	3198 010 42310	BC847BW
						7515	9340 217 70115	BC847BW
						7516	5322 130 42756	BC857C
						7516	9340 218 50115	BC857BW
						7517	9322 158 67685	ADM810TART
						7530	4822 209 90188	PCF8591T
						7540	5322 209 33172	PCF8574AT
						7563	3198 010 42310	BC847BW
						7563	9340 217 70115	BC847BW
						7570	9322 137 99668	FS6377-01
						7571	5322 209 11598	PC74HCT4538T
						7574	9352 317 00118	74LVC125AD
						7580	9322 156 81668	M24C32-WMN6TNKSA
						7605	9322 158 73671	PW164-10R
						7628	9322 164 75682	CY62126BVLL-70ZI
						7630	3122 357 00264	Software FM23GB-1.3-00264
						7631	3198 010 42310	BC847BW
						7640	4822 209 16406	TL431ACD
						7641	9322 157 95668	STD16NE06L
						7655	3122 357 00284	Software FM23GB2400284
						7656	9322 165 40671	EP1K30FC256-3
						7670	9322 159 45668	DS90C385MTD
						7675	9340 547 13215	BSH103
						7675	9340 560 36235	BSH111
						7675	9965 000 04199	BSN20
						7676	9340 547 13215	BSH103
						7676	9340 560 36235	BSH111
						7676	9965 000 04199	BSN20
						7714	4822 209 30095	LM833D
						7718	9340 217 70115	BC847BW
						7734	4822 209 30095	LM833D
						7754	4822 209 30095	LM833D
						7798	9322 116 87668	TEA6422D
						7800	4822 209 60792	74HC4053D
						7801	3198 010 42310	BC847BW
						7801	9340 217 70115	BC847BW
						7802	3198 010 42310	BC847BW
						7802	9340 217 70115	BC847BW
						7803	5322 130 42756	BC857C
						7803	9340 218 50115	BC857BW
						7805	9340 547 13215	BSH103
						7806	9340 547 13215	BSH103
						7807	9340 547 13215	BSH103
						7808	9340 547 13215	BSH103
						7812	9322 167 63668	MSP3415G-QG-B8
						7841	4822 209 30095	LM833D
						7851	4822 209 30095	LM833D

7861	4822 209 30095	LM833D
7861	9322 173 77668	TS462CD
7870	9322 167 76668	TC74HC590AF
7874	9322 167 76668	TC74HC590AF
7879	3198 010 42310	BC847BW
7879	9340 217 70115	BC847BW
7880	9322 153 66668	CY7C199-15ZC
7881	9351 869 80118	74HCT573DB
7882	9351 869 80118	74HCT573DB

VGA Panel [VGA]

Various

0318	2422 025 17183	32P female hor 1.00
0371	4822 267 51477	15P female SUB-D
0372	4822 267 51477	15P female SUB-D
0374	2422 026 05276	Socket 1 x cinch

—|—

2901	2238 586 59812	100nF 80-20% 50V
2901	4822 126 14305	100nF 10% 16V 0603
2902	2238 586 59812	100nF 80-20% 50V
2902	4822 126 14305	100nF 10% 16V 0603
2909	2238 586 59812	100nF 80-20% 50V
2909	4822 126 14305	100nF 10% 16V 0603
2910	2238 586 59812	100nF 80-20% 50V
2910	4822 126 14305	100nF 10% 16V 0603
2925	2020 552 94427	100pF 5% 50V

□

3900	4822 051 30759	75Ω 5% 0.062W
3901	4822 051 30759	75Ω 5% 0.062W
3902	4822 051 30759	75Ω 5% 0.062W
3903	4822 051 30101	100Ω 5% 0.062W
3904	4822 051 30103	10k 5% 0.062W
3905	4822 051 30103	10k 5% 0.062W
3906	4822 051 30101	100Ω 5% 0.062W
3907	4822 051 30101	100Ω 5% 0.062W
3908	4822 051 30101	100Ω 5% 0.062W
3909	4822 051 30101	100Ω 5% 0.062W
3910	4822 051 30103	10k 5% 0.062W
3911	4822 051 30101	100Ω 5% 0.062W
3912	4822 051 30102	1k 5% 0.062W
3913	4822 051 30101	100Ω 5% 0.062W
3914	4822 051 30102	1k 5% 0.062W
3915	4822 051 30101	100Ω 5% 0.062W
3916	4822 051 30101	100Ω 5% 0.062W
3917	4822 051 30103	10k 5% 0.062W
3918	4822 051 30103	10k 5% 0.062W
3919	4822 051 30101	100Ω 5% 0.062W
3920	4822 051 30101	100Ω 5% 0.062W
3921	4822 051 30103	10k 5% 0.062W
3922	4822 051 30101	100Ω 5% 0.062W
3923	4822 051 30102	1k 5% 0.062W
3924	4822 051 30101	100Ω 5% 0.062W
3925	4822 051 30102	1k 5% 0.062W
3926	4822 051 30101	100Ω 5% 0.062W
3927	4822 051 30472	4k7 5% 0.062W
3928	4822 051 30472	4k7 5% 0.062W
3929	4822 051 30472	4k7 5% 0.062W
3930	4822 051 30472	4k7 5% 0.062W
3934	4822 051 30103	10k 5% 0.062W
3935	4822 051 30333	33k 5% 0.062W

~~~~~

5900	2422 549 43062	Bead 100MHz 600Ω
5900	4822 157 11074	100μH 6%
5901	2422 549 43062	Bead 100MHz 600Ω
5901	4822 157 11074	100μH 6%

→|←

6900	9322 149 10685	BZM55-C33
6901	9322 149 10685	BZM55-C33
6902	9322 149 10685	BZM55-C33
6903	9322 149 10685	BZM55-C33
6904	4822 130 10654	BAT254
6905	4822 130 10654	BAT254
6906	9322 149 10685	BZM55-C33
6907	9322 149 10685	BZM55-C33
6908	9322 149 10685	BZM55-C33
6909	9322 149 10685	BZM55-C33
6910	9322 149 10685	BZM55-C33
6911	9322 149 10685	BZM55-C33
6912	9322 149 10685	BZM55-C33
6913	9322 149 10685	BZM55-C33

6914	9322 149 10685	BZM55-C33
6915	9322 149 10685	BZM55-C33
6916	4822 130 10654	BAT254
6918	9322 149 10685	BZM55-C33
6920	9322 149 10685	BZM55-C33
6921	9322 149 10685	BZM55-C33
6922	9322 149 10685	BZM55-C33
6923	9322 149 10685	BZM55-C33
6925	9322 149 10685	BZM55-C33



7900	5322 209 71568	PC74HCT14T
7904	3122 357 00301	Software DDC_7904_00301
7907	3122 357 00311	Software DDC_7907_00311
7910	4822 209 30212	PC74HCT125T
7915	3198 010 42310	BC847BW
7915	9340 217 70115	BC847BW